

ORDER NO. MKE0001101A1

B3

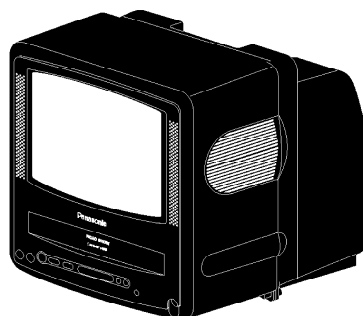
Combination VCR



PV-C920 / PV-C930W / PV-C920-K

Please use this manual together with the Service Manual for Order No. MKE9901101C1; Model No. PV-M939/PV-M949W/PV-M939-K.

Omnivision VHS



SPECIFICATIONS

ITEM	SPECIFICATION	ITEM	SPECIFICATION
VCR	Head: 2 rotary heads helical scanning system	VCR	SP: 1-9/16 p.p. (23.35 mm), LP: 2/101 p.p. (15.87 mm), SLP: 2/118 p.p. (11.12 mm)
	Input Level: VIDEO (U Jack) (Photo type) 1.0 Vp-p 75 Ω unbalanced		Recess/Playback Time: 3 hr. with 150 min. type tape used in SLP mode
	Signal-to-Noise Ratio: SP: more than 41 dB		FF/REW Time: Less than 2-1/2 min. (150 min. type tape)
	LP/SLP: more than 41 dB		
	Horizontal Resolution: Color/Monochrome: more: SP: 230 lines		
VCR	LP/SLP: 225 lines	FM Radio	Band Range: 87.5 MHz to 108.1 MHz
	Head: Normal Mono: 1 stationary head		Picture Tube: 9 inch measured diagonal 90° deflection Picture Tube
	Input Level: AUDIO (U Jack) (Photo type) -10 dB to 10 dB unbalanced		
	Frequency Response: Normal Mono: SP: 100 Hz to 4 kHz		
	LP: 100 Hz to 4 kHz		
VCR	Signal-to-Noise Ratio: Normal Mono: SP: more than 41 dB	Power	Source: 120 V/50 Hz (AC) (Rated 100 Hz (AC))
	LP/SLP: more than 41 dB		12 V/24 V (DC)
	Wine and Flutter: Normal Mono: SP: Less than 0.2 % W/FMS		Consumption: Approx. 50 W (Power On) (AC), Approx. 1.1 W (Power Off) (AC)
	LP: Less than 0.2 % W/FMS		Approx. 50 W (Power On) (DC), Approx. 0.8 W (DC) (DC), Approx. 1.1 W (DC) (DC) (Power Off)
	SLP: Less than 0.2 % W/FMS		[CA] Decoded (SDDS) lines, (60 lines) NTSC Color Signal
Tuner	Broadcast Channels: VHF 2-13, UHF 14-69	TELEVISION System	Operating Condition: 5 °C to 40 °C (at 75 °C (164 °F)) (Temperature)
	CABLE Channels: Midband A through I (14-22)		Dimension: 302 mm x 227 mm x 335 mm (W x H x D)
	Superband J through W (23-36)		(11 7/8 inch x 9 inch x 13 1/8 inch) (W x H x D)
	Hyperband AA-ZEE (37-54)		Weight: 5.1 kg (11.1 lbs.)
	Lowband AA-AV (55-66)		
	Special CABLE channel SA (67)		
	Midband (68-84, 100-110)		

Weight and dimensions shown are approximate.
Designs and specifications are subject to change without notice.

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1. DIFFERENCES BETWEEN PV-C920 and PV-M939

1.1. COMPARISON CHART

1.1.1. MECHANICAL REPLACEMENT PARTS LIST

Ref. No.	Section No.	Pcs/ Set	PV-M939 → PV-C920		Part Name	Remarks
			Part No.	Part No.		
38	4	1	LEB62001A	LSMB0221	CASSETTE DOOR SPRING	MKA
71	4	1	LXQKY1099VP	LXQKY03090	FRONT CABINET ASS'Y	MKA
72	4	1	LKK688038A	LSKF0297	CASSETTE DOOR-LID	MKA
100	6	1	VKFS2235	LSVQ0017	BATTERY COVER	MKA
121	6	1	LPH610201A	LSPG0724	PACKING CASE,PAPER	MKA
122	6	1	VQFS3526	LSQF0181	FAN BAG	MKA
123	6	1	VSQS1602	LSSQ0224	INFRARED REMOTE CONTROL UNIT	MKA

2. DIFFERENCES BETWEEN PV-C930W and PV-M949W

2.1. COMPARISON CHART

2.1.1. MECHANICAL REPLACEMENT PARTS LIST

Ref. No.	Section No.	Pcs/ Set	PV-M949W → PV-C930W		Part Name	Remarks
			Part No.	Part No.		
38	4	1	LEB62001A	LSMB0221	CASSETTE DOOR SPRING	MKA
71	4	1	LXQKY1099VPW	LXQKY02090	FRONT CABINET ASS'Y	MKA
72	4	1	LKK688045A	LSKF0298	CASSETTE DOOR-LID	MKA
100	6	1	VKFS2237	LSVQ0018	BATTERY COVER	MKA
121	6	1	LPH610202A	LSPG0725	PACKING CASE,PAPER	MKA
122	6	1	VQFS3549A	LSQF0188A	FAN BAG	MKA
123	6	1	VSQS1605	LSSQ0225	INFRARED REMOTE CONTROL UNIT	MKA

3. DIFFERENCES BETWEEN PV-C920-K and PV-M939-K

3.1. COMPARISON CHART

3.1.1. MECHANICAL REPLACEMENT PARTS LIST

Ref. No.	Section No.	Pcs/ Set	PV-M939-K → PV-C920-K		Part Name	Remarks
			Part No.	Part No.		
38	4	1	LEB62001A	LSMB0221	CASSETTE DOOR SPRING	MKA
71	4	1	LXQKY1099VP	LXQKY01090	FRONT CABINET ASS'Y	MKA
72	4	1	LKK688038A	LSKF0297	CASSETTE DOOR-LID	MKA
121	6	1	LPH610203A	LSPG0794	PACKING CASE,PAPER	MKA
122	6	1	VQFS3554	LSQF0249	FAN BAG	MKA
123	6	1	VSQS1602	LSSQ0188	INFRARED REMOTE CONTROL UNIT	MKA
252	6	0→1	-----	LSPG0846	PAD	MKA

4. EXPLODED VIEW


4.1. PACKING PARTS AND ACCESSORIES SECTION

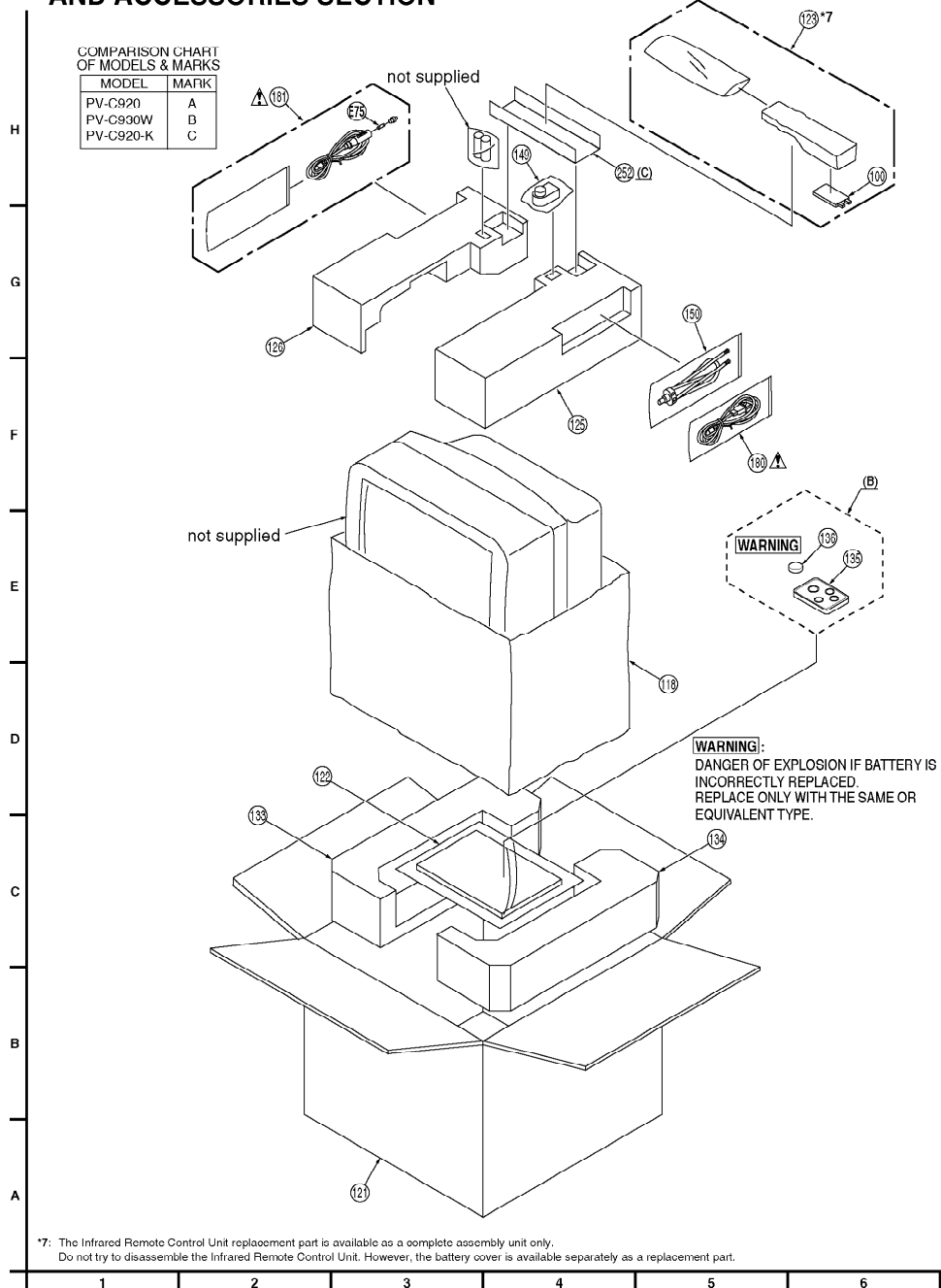
6 PACKING PARTS AND ACCESSORIES SECTION

COMPARISON CHART
OF MODELS & MARKS

MODEL	MARK
PV-C920	A
PV-C930W	B
PV-C920-K	C

IMPORTANT SAFETY NOTICE

COMPONENTS IDENTIFIED BY THE SIGN  HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.



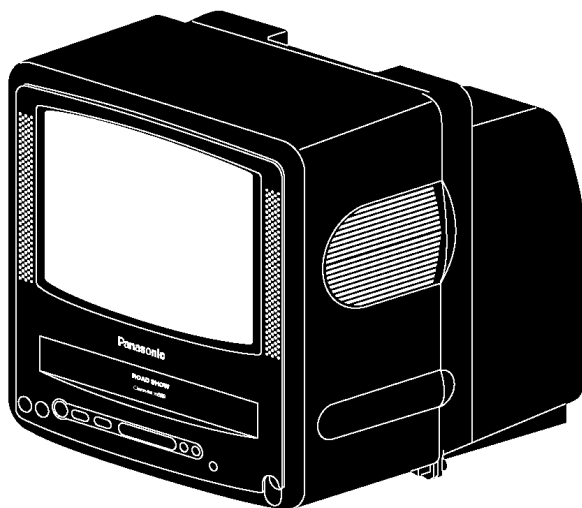
Service Manual

Combination VCR

Omnivision

VHS

PV-M939
PV-M949W
PV-M939-K



SPECIFICATIONS

ITEM		SPECIFICATION		ITEM		SPECIFICATION	
VCR	Video	Head: 2 rotary heads helical scanning system		VCR	Tape Speed	SP: 1-5/16 i.p.s (33.35 mm/sec), LP: 21/32 i.p.s (16.67 mm/sec), SLP: 7/16 i.p.s (11.12 mm/sec) Record/Playback Time: 8 Hrs with 160 min. type tape used in SLP mode FF/REW Time: Less than 3 min. (120 min. type tape)	
		Input Level: VIDEO IN Jack (Phono type) 1.0 Vp-p 75Ω unbalanced					
		Signal-to-Noise Ratio: SP: more than 43 dB LP/SLP: more than 41 dB			Tape Format	Tape width 1/2" (12.7 mm) high density tape	
		Horizontal Resolution: Color/Monochrome: more than 230 lines					
	Audio	Head: Normal Mono: 1 stationary head		FM Radio	Band Range	87.5 ~ 108.1 MHz	
		Input Level: AUDIO IN Jack (Phono type) -10 dBv 50kΩ unbalanced					
		Frequency Response: Normal Mono: SP: 100 Hz ~ 8 kHz LP: 100 Hz ~ 6 kHz SLP: 100 Hz ~ 5 kHz		DISPLAY	Picture Tube	9 inch measured diagonal 90° deflection Picture Tube	
		Signal-to-Noise Ratio: Normal Mono: SP: more than 42 dB LP/SLP: more than 40 dB					
		Wow and Flutter: Normal Mono: SP Less than 0.2% WRMS LP: Less than 0.3% WRMS SLP: Less than 0.4% WRMS		GENERAL	Power Source	120V ± 10%, 60 Hz ± 0.5% (AC) 12V/24V (DC)	
						Power Consumption	Approx. 64 watts (power on), Approx. 3.5 watts (power off) (AC) Approx. 59 watts (power on), Approx. 0.8 watts (DC 12V)/Approx. 1.5 watts (DC 24V) (power off)
			Television System				EIA Standard (525 lines, 60 fields) NTSC Color Signal
						Operating Condition	41°F(5°C) ~ 104°F(40°C) (Temperature) 10% ~ 75% (Humidity)
	Tuner	Broadcast Channels: VHF 2 ~ 13, UHF 14 ~ 69 CABLE Channels: Midband A through I (14 ~ 22) Superband J through W (23 ~ 36) Hyperband AA ~ EEE (37 ~ 64) Lowband A-5 ~ A-1 (95 ~ 99) Special CABLE channel 5A (01) Ultraband 65 ~ 94, 100 ~ 125		Dimension	11-7/8"(302mm) (W) X 12-7/8"(327mm) (H) X 13-3/16"(335mm) (D)		
					Weight	20.1 lbs. (9.1 kg)	

Weight and dimensions shown are approximate.
 Designs and specifications are subject to change without notice.

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

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1 SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by \triangle in the Schematic Diagrams, Circuit Board Layout, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent X-RADIATION, shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.

2. An Isolation Transformer should always be used during the servicing of Combination VCR whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect Combination VCR from being damaged by accidental shorting that may occur during servicing.
3. When servicing, observe the original lead dress, especially the lead dress in the high voltage circuits. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers, shield, and isolation R-C combinations are properly installed.
5. Before turning the receiver on, measure the resistance between B+ line and chassis ground. Connect (-) side of an ohmmeter to the B+ lines, and (+) side to chassis ground. Each line should have more resistance than specified, as follows :

B+ Line	Minimum Resistance
115V	1K ohm (Cold chassis ground)
23V	180 ohms (Cold chassis ground)
15V	110 ohms (Cold chassis ground)
6. When the TV set is not used for a long period of time, unplug the power cord from the AC outlet.
7. Potentials, as high as 20.0KV is present when this TV set is in operation. Operation of the TV set without the rear cover involves the danger of a shock hazard from the TV set power supply. Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment. Always discharge the anode of the picture tube to the CRT ground of receiver before handling the tube.
8. After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazards.

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. For physically operated power switches, turn power on. Otherwise skip step 2.
3. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the receiver, such as screwheads, connectors, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1 M ohm and 12 M ohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity.

LEAKAGE CURRENT HOT CHECK

1. Plug the AC cord directly into the AC outlet.
Do not use a isolation transformer for this check.
2. Connect a 1.5K ohms, 10 watts resistor, in parallel with a 0.15 micro farad capacitor, between each exposed metallic part on the set and a good earth ground, as shown in Figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.

The potential at any point should not exceed 0.75 volt RMS.

A leakage current tester (Simpson Model 229 equivalent) may be used to make the hot checks. Leakage current must not exceed 1/2 milliamperes. In case a measurement is outside of the limits specified, there is a possibility of shock hazard, and the receiver should be repaired and rechecked before it is returned to the customer.

Hot-Check Circuit

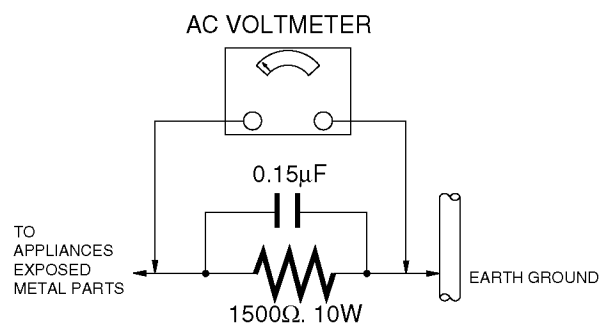


Figure 1

2 X-RADIATION

WARNING :

1. The potential source of X-Radiation in TV sets is the High Voltage section and the picture tube.
2. When using a picture tube test fixture for service, ensure that the fixture is capable of handling 20.0KV without causing X-Radiation.

NOTE :

It is important to use an accurate periodically calibrated high voltage meter.

1. Reduce the brightness to minimum.
2. Set the SERVICE switch to SERVICE .
3. Measure the High Voltage. The meter reading should indicate 18.5 +/- 1.5KV.
If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.
4. To prevent an X-Radiation possibly, it is essential to use the specified picture tube.

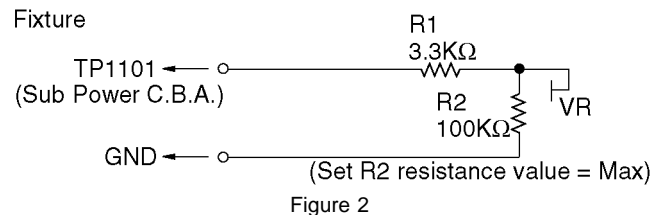
HORIZONTAL OSCILLATOR DISABLE CIRCUIT TEST

SERVICE WARNING :

The test must be made as a final check before set is returned to the customer.

CONFIRMATION OF X-RAY MOVEMENT

1. Preparation



2. Adjustment

- (1) Turn off TV set, and connect the fixture between GND and TP1101 (Sub Power C.B.A.).
- (2) Turn on TV set, and the digital pattern is displayed.
- (3) Confirm that the picture goes out of horizontal sync while changing the VR on the fixture.
 - If the Power goes off while changing the VR, adjust the VR to maximum and turn the TV set back on. Then, reconfirm.
- (4) After confirmation, set the VR back to maximum and turn off the unit. Then, remove the fixture.

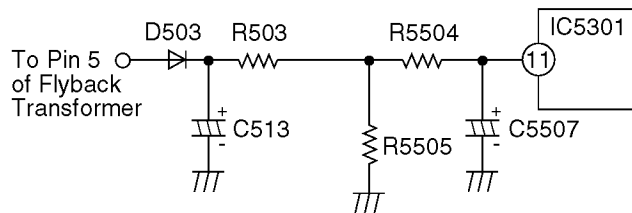
REPAIR PROCEDURES OF HORIZONTAL OSCILLATOR DISABLE CIRCUIT

1. Connect a DC voltmeter between capacitor C513 (+) on the Main circuit board and chassis ground.
2. If approximately +22.8V is not present at that point when 120V AC is applied, find the cause. Check R503, R5505, C5507, C513 and D503.
3. Carefully check above specified parts and related circuits and parts. When the circuit is repaired, try the horizontal oscillator disable circuit test again.

CIRCUIT EXPLANATION

HORIZONTAL OSCILLATOR DISABLE CIRCUIT

The positive DC voltage, supplied from the D503 cathode for monitoring high voltage, is applied to the IC5301 Pin11 through R503 and R5504. Under normal conditions, the voltage at IC5301 Pin 11 is less than approx 3V. If the high voltage at Flyback Tr Pin 5 exceeds the specified voltage, the positive DC voltage which is supplied from the D503 cathode also increases. The increased voltage is applied to IC5301 Pin11 through R503 and R5504. Due to the increased voltage at IC5301 Pin11, the horizontal oscillator frequency increases, the picture goes out of horizontal sync, the beam current decreases and the picture becomes dark in order to keep X-radiation under specification.



3 PREVENTION OF ELECTROSTATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors are semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an antistatic solder removal device. Some solder removal devices not classified as "antistatic (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION:

Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

"NOTE to CATV system installer :

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical."

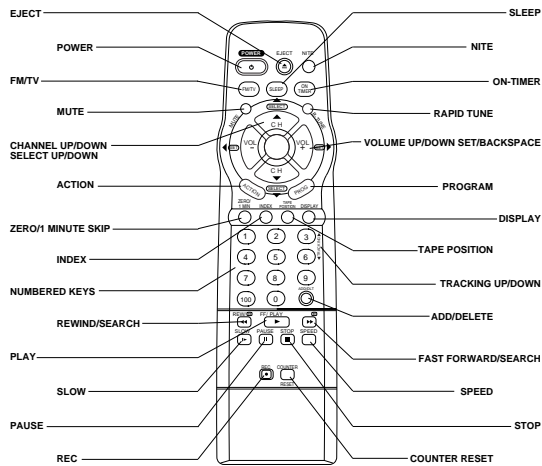
4 OPERATION GUIDE

Location of Controls

Remote Control Buttons

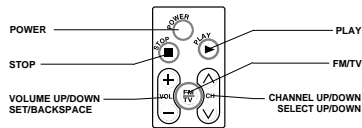
Tower Remote Control

EJECT button:
When EJECT is pressed, the tape is ejected from Cassette Compartment.
If EJECT is pressed during recording, the Combination VCR will not respond to the command.

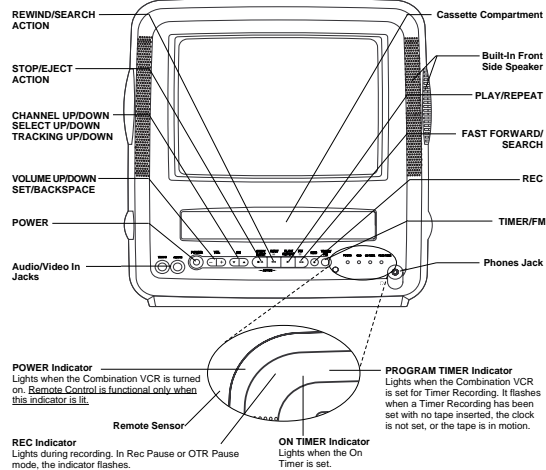


Kitchen (Easy-Find*) Remote Control <Model PV-M949W only>

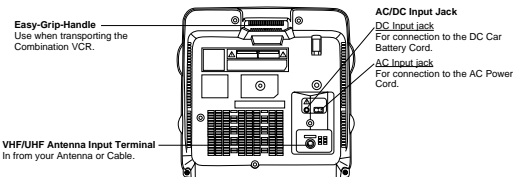
- * This remote control has a magnet on the back so you can stick it to your refrigerator, etc. for convenience.
- * The Kitchen remote control buttons work the same as the above remote control.



Front View of the Combination VCR and Indicators on the Front Panel



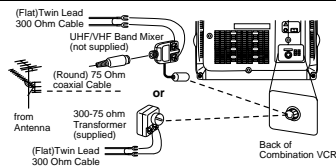
Rear View of the Combination VCR



Connections

Outdoor Antenna Connections

Unhook the antenna from your previous TV or VCR and connect it to the back of the Combination VCR as shown in the diagram.
If your antenna system has separate UHF and VHF leads, you need a UHF/VHF Band Mixer (not supplied.)

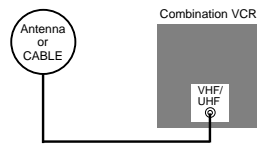


DSS/Cable box Connections

Without a Cable Box

You can:

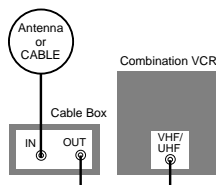
- record or view unscrambled channels.
- You cannot:
- record or view scrambled channels.
- view a channel other than the one selected for any type of recording.



With a Cable Box

You can:

- record or view any channel including scrambled channels.
- NOTE: Channel selection must be made at the cable box.
- You cannot:
- view a channel other than the one selected for any type of recording.
- do a Timer recording of a channel unless you select it at the cable box.



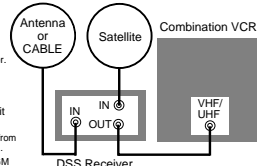
Note to CABLE System Installer
This reminder is provided to call the CABLE (Cable TV) System Installers attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

With a DSS Receiver

You can:

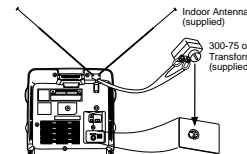
- record or view any channel including scrambled channels.
- NOTE: Channel selection must be made at the DSS Receiver.
- You cannot:
- view a channel other than the one selected for any type of recording.
- do a Timer recording of a channel unless you select it at the DSS box.

NOTE: The DSS Receiver must be turned off to view programs from a cable box or antenna. See the DSS manual for details.
DSS is registered trademark of DIRECTV, INC., a unit of GM Hughes Electronics.



Indoor Antenna Connections

Insert the Indoor antenna (supplied) into the receptacle on the back of the Combination VCR. Then, connect the two wires to the 300 ohm-75 ohm transformer (supplied.)
Next, connect the transformer to the back of the Combination VCR as shown.
Now, extend the antenna and adjust its length, direction and angle for the clearest picture.

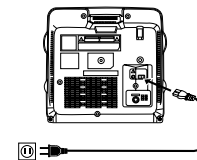


Connecting to a Power Source

Your Combination VCR goes where you go with two different ways to supply power. You may connect the supplied AC (alternate current) cord for use with any AC outlet. Or when travelling, connect the supplied DC (direct current) Car Battery cord which can be inserted in your vehicle's cigarette lighter. For your safety and to avoid damage to the Combination VCR, please follow instructions and connections carefully.

Connecting the (supplied) AC Cord

1. Connect the supplied AC cord to the AC input jack on the back of the Combination VCR as shown.
2. Plug the AC cord into an AC wall outlet.

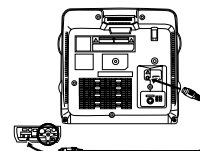


Connecting the (supplied) DC Cord

1. Connect the DC Car Battery cord to the DC input on the back of the Combination VCR as shown.
2. Start the engine of your vehicle.
3. **DO NOT** insert the cord into the cigarette lighter until the engine is running.
4. Remove the cigarette lighter from its socket and insert the Car Battery plug in its place.

IMPORTANT NOTES

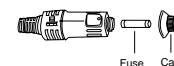
- This cord can only be used in vehicles equipped with DC 12V or 24V (negative ground) batteries. Check your car's owner's manual.
- Use the only the Car Battery cord packed with your Combination VCR.
- To avoid a loss voltage, do not attach an extension to the Car Battery cord.
- When unit is not in use, disconnect the Car Battery cord from the cigarette lighter socket to save car battery.



Replacing the DC Car Cord Fuse

If the safety fuse in the car cord plug blows out, replace it as follows.

1. Unscrew the cap (counterclockwise.)
2. Replace using a 125V 10A fuse.
3. Replace the cap (clockwise.)



One Time Setup

When the Combination VCR is turned on the first time, setup mode is entered automatically.

Process of Setup

Language → Channel → Clock

- 1** **Press POWER on the Combination VCR.**
- 2** **Select the language.**
PUSH CH ▲: English
OPRIMIR CH ▼: Español
APP: VOL +: Français
• If wrong language is set, do "Reset all Combination VCR Memory Functions" steps.
• If you use a cable box, the cable box must be left on.

- 3** **Start Channel Auto Set and Clock Auto Set.**
Press CH ▲.

CH AUTO SET PROCEEDING

AUTO CLOCK SET PROCEEDING

Case 1
(Setup completed)
7/28/1999 WED 12:00PM
DST ON
SETTING : CH 10
AUTO CLOCK SET
COMPLETED
END : PUSH CH UP KEY

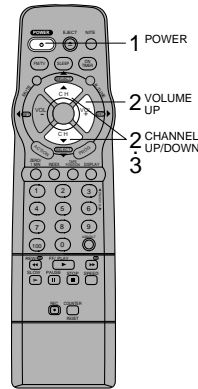
• If your area observes daylight saving time and DST is set to ON, but the time is incorrect, do the Time Zone Adjust steps on the next page.

Case 2
(Setup incomplete)
AUTO CLOCK SET
IS INCOMPLETE
PUSH ACTION TO SET CLOCK

See Case 2.

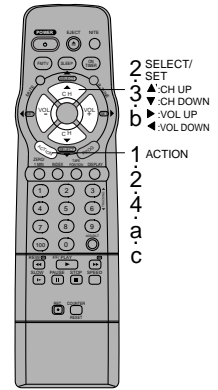
IMPORTANT NOTE FOR AUTO CLOCK SET

- Auto clock set is performed the first time when Combination VCR is turned off each day. If used, a cable box must be left on and tuned to the PBS channel at the time Combination VCR power is turned off if you want auto clock set to be done.
- If using, a DSS receiver, must be turned off for auto clock set.
- If Cable Box or DSS receiver is connected to Combination VCR via Audio/Video Jacks, an RF coaxial cable must also be connected for auto clock set and channel auto set features.
- If, for any reason, the time is changed manually, automatic time correction will not occur.



Case 1 Set TIME ZONE ADJUST.

- 1** **Display MAIN MENU.**
Press ACTION.
- 2** **Display SET CLOCK screen.**
1) Press ▲▼ to select "CLOCK."
2) Press ACTION to display.
- 3** **Select TIME ZONE ADJUST.**
1) Press ▲▼ to select.
2) Press ▲▼ to subtract or add hour(s) as necessary.
- 4** **End setup.**
Press ACTION twice.
• TIME ZONE ADJUST returns to "0" if clock is set manually.



Notes

- This Combination VCR calendar is accurately maintained up to Dec. 31, 2089, 11:59PM.
- Channel auto set selects normal TV or Cable channels depending on your Combination VCR hookup.

Case 2 Clock Setup is Incomplete. Set the clock manually.

- a** **Display SET CLOCK screen.**
Press ACTION to exit this mode.
- b** **Set the clock manually.**
1) Press ▲▼ to select the month.
2) Press ▲▼ to set.
• Likewise set date, year, time, and DST (Daylight Saving Time.)
To Make Corrections, repeatedly press ▲▼ to move to error, then correct.
- c** **End setup.**
Press ACTION twice (Clock starts.)

Using ▲▼ keys

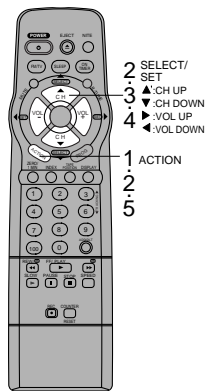
On Remote:
▲: CH UP
▼: CH DOWN
▲: VOLUME UP
▼: VOLUME DOWN
Whenever the menu or program screen is displayed, CHANNEL UP/DOWN and VOLUME UP/DOWN function as ▲▼ only.

ACTION control on the unit

You can operate the menu screen using unit buttons.
To display the menu, press STOP/EJECT and REV together with no tape inserted.
To exit the menu, repeat above with or without tape inserted.

Picture Adjustment

- 1** **Display MAIN MENU.**
Press ACTION.
- 2** **Display SET UP TV screen.**
1) Press ▲▼ to select "TV."
2) Press ACTION to display.
- 3** **Display VIDEO ADJUST screen.**
1) Press ▲▼ to select.
2) Press ▲▼ to display.
- 4** **Adjust desired item.**
1) Press ▲▼ to select an item. (See below right.)
2) Press ▲▼ to adjust.
To Reset Picture Controls
Press ▲▼ and ► to select and set "NORMAL."
All controls return to their factory settings.



- 5** **End setup.**
Press ACTION three times to exit.

Note

Due to the earth's magnetic fields, or magnetic charge build-up from nearby electrical appliances, color distortion may occur if the Combination VCR direction is changed while it is on. To avoid this, position the Combination VCR before turning it on. If this phenomenon does occur, press the POWER off and then on again.

Picture Adjustment

COLOR Control

Adjust color intensity.

TINT Control

Adjust for natural flesh tones.

BRIGHTNESS Control

Adjust picture brightness.

PICTURE Control

Adjust picture intensity by adjusting both contrast and color level in the proper balance.

SHARPNESS Control

Adjust picture sharpness.

Timer Recording

You can set up to 8 programs to be recorded while you are away.

- 1** **Display SET PROGRAM.**
Press PROG.
• If a program is already in memory, press ▲▼ and ► to select an unused program number.
- 2** **Set the recording DATE.**
1) Press ▲▼ to select.
2) Press ► or ◀ to set.
• 1-31 = One time
• DAILY = MON-FRI
• WEEKLY SUN-SAT = Same time once a week
Example
Today's Date: 7 FRI 9:00P 12:00A 08
WEEKLY (SAT) WEEKLY (MON) WEEKLY (SUN)
Repeat step 2 to set:
• start time, stop time
• Channel (or LINE for outside source)
• Category (N/A (not applicable), SPORTS, MOVIE, COMEDY, MUSIC, DRAMA)
• Speed (SP, LP, SLP)
- 3** **Make the notes.**
• If not wanted, go to step 4.
1) Press ▲ to begin.
2) Press ▲▼ to select.
3) Press ► or ◀ to set.
4) Press PROG (or ACTION) to end.

- Characters will change in the following order.
A—B—C—...—Z—BLANK—...—0—1—2—3—4—5—6—7—8—9

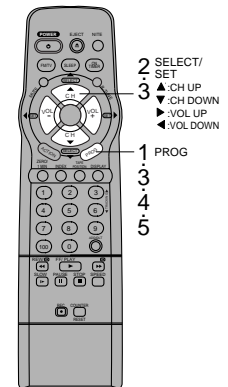
Continued on the next page.

Notes

- If "PLEASE PREPARE FOR TIMER REC" appears and/or the PROGRAM TIMER indicator flashes, check that a cassette with record tab is loaded and the Combination VCR is in Stop mode.
- If the start times of two programs overlap, the lower numbered program will have priority.
- If the start time for a Timer Recording comes up during a normal recording or One Touch Recording, the Timer Recording will not be performed.
- If there is a power interruption of more than one minute, the recording may not be performed or continue.
- If "INCOMPLETE" appears after all items have been set, check all entries and make necessary corrections.
- When using DC Power supply, a Timer Recording can not be performed if POWER on the Combination VCR is pressed OFF.

Check list before you begin.

- ☐ All connections are made.
- ☐ Your Combination VCR is plugged in.
- ☐ The clock is set to correct time.
- ☐ The tape is long enough.
- ☐ The record tab is in place.



Timer Recording Using Combination VCR Buttons

You can set the Timer Recording using ACTION control on the Combination VCR.

- 1 Press STOP/EJECT and REV together without a tape to display MAIN MENU.
- 2 Press ▲▼ to select "VCR" and STOP/EJECT and REV together to display SET UP VCR screen.
- 3 Press ▲▼ to select "TIMER PROGRAM" and ► to display the TIMER PROGRAM screen.
- 4 Repeat steps 2-5.

Timer Recording (continued)

4



End the program.
Press PROG (or ACTION.)

To Enter More Programs
Press ▲ and ► to select and set a blank program number, and then repeat steps 2 and 3.

5



Exit this mode.
Press PROG (or ACTION.)

• If you're using a cable box, make sure that it is tuned to the desired channel and the power is left on for timer recording.
• PROG TIMER indicator lights on the Combination VCR.

Cancel a Timer Recording: (Recording is in progress)
Hold down STOP for a few seconds to cancel the Timer Recording.

• Any future daily or weekly recordings will be performed as programmed.



PROG TIMER indicator

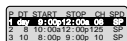
Review, Replace or Clear Program Contents: (Recording is not in progress)

a



Display SET PROGRAM.
Press PROG.

b



Select the desired program.
Press ▲▼ to select.

c



To Replace program...

1) Press ► to display.
2) Press ▲▼ to set new program contents.
3) Press PROG (or ACTION.)



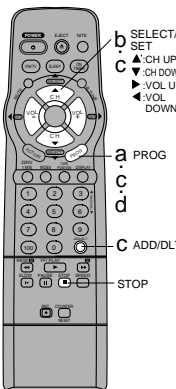
To Clear program...

Press ADD/DLT.

d



Exit this mode.
Press PROG (or ACTION.)



FM Radio

FM Radio is...

The Combination VCR has an FM radio with built-in antenna, 9 station preset, and a band range of 87.5-108.1 MHz. You can even set the On-Timer to wake up to your favorite radio station.

Process of FM Radio

Antenna → Setup → Using

FM ANTENNA Setup

1



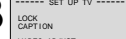
Display MAIN MENU.
Press ACTION.

2



Display SET UP TV screen.
1) Press ▲▼ to select "TV."
2) Press ACTION to display.

3



Select FM ANTENNA.
1) Press ▲▼ to select.
2) Press ► for "INT (INTERNAL)" or "EXT (EXTERNAL)."

■ If you do not have a cable box → "INT"
■ If you have a cable box → "EXT"

Note

If, due to the cable box used, you do not receive the desired radio station during FM radio Setup, please select FM ANTENNA: "INT."

4



End setup.
Press ACTION twice to exit.

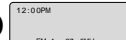
FM Radio Setup

a

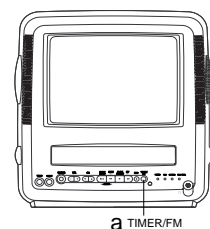


Display FM radio mode.
Press FM/TV on the remote or TIMER/FM twice on the Combination VCR.

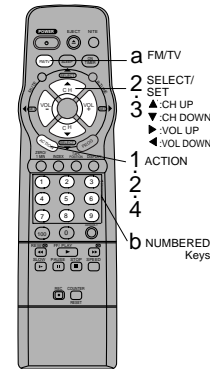
b



Select the FM number.
Press a NUMBERED key (1-9.)



a. TIMER/FM

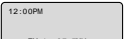


Notes

• If INDEX is pressed while in the FM radio mode, you will not be able to select other stations with the NUMBERED keys.
• FM radio stations cannot be recorded on a Video cassette.
• You may get better reception by repositioning the Combination VCR.
• You cannot select FM Radio mode during playback or record, or while a blue back screen (ACTION, PROG, and ON-TIMER) is displayed.

FM Radio (continued)

c



Set the radio station.

1) Press ▲▼ to select the desired radio station. (Each press changes frequency 200 KHz.)
2) Press ADD/DLT to set.

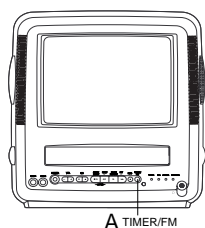
Quick Station Scan
Hold down ▲ or ▼ for more than 1 second, then release to scan for FM stations in your area.
• To cancel, press ▲ or ▼ while in search mode.

To Make Corrections,
select station with a NUMBERED key, then do step c again.

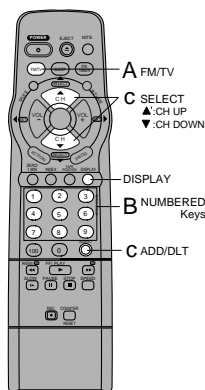
To exit FM mode, press FM/TV on the remote or TIMER/FM twice on the Combination VCR.

Process of FM Radio

Antenna → Setup → Using



A. TIMER/FM



Using FM Radio

A



Display FM radio mode.
Press FM/TV on the remote and TIMER/FM twice on the Combination VCR.

B



Select the FM number.
Press a NUMBERED key (1-9) to select a preset station (see steps b and c.)

To cancel, press FM/TV on the remote or TIMER/FM twice on the Combination VCR.

Note

Once stations are set, the selected station and current time are displayed when FM radio mode is entered.

The station disappears in 10 seconds.

To remove time, press DISPLAY.

If DISPLAY is pressed while station is still on the screen, or when there is no display, the Combination VCR status screen appears.

Special VCR Features

Weak Signal Display ON/OFF

When "ON" is selected, picture is displayed even when broadcast signal is weak or nonexistent.

1



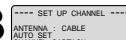
Display MAIN MENU.
Press ACTION.

2



Display SET UP CH screen.
1) Press ▲▼ to select "CH."
2) Press ACTION to display.

3



Select WEAK SIGNAL DISPLAY.

1) Press ▲▼ to select.
2) Press ► to set "ON" or "OFF."

Notes

• "ON" = Picture is displayed regardless of signal condition, and may not always be clearly visible.

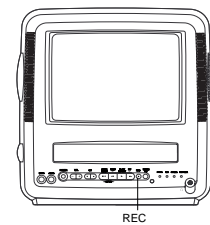
• "OFF" = Screen turns solid blue when signal is absent or weak.

• If Combination VCR is connected to equipment which has blue back feature, selecting "ON" will have no effect on the other equipment.

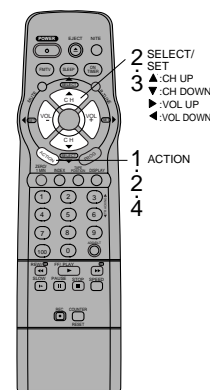
4



Return to normal screen.
Press ACTION twice.

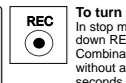


REC



VCR Lock

All operations are prohibited except Timer recording and tape eject. Useful for families with small children.



To turn "ON."
In stop mode, hold down REC on the Combination VCR without a cassette for 7 seconds.

To turn "OFF."
Repeat above with or without a cassette.

• VCR Lock is cancelled automatically after 24 hours if clock is set.

• This feature cannot be activated when POWER on the Combination VCR is turned OFF (POWER indicator is not lit.)

V-Chip Control Feature

V-Chip Control Feature is...

The Combination VCR has built-in V-Chip Control which allows you to block unwanted TV usage based on Motion Picture and TV Parental Guide ratings.

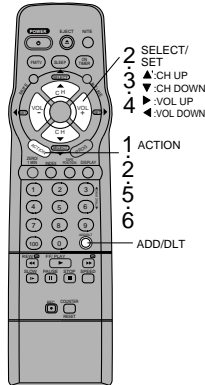
Process of V-Chip Control Feature

Enter Code → Setup → Blocking

Enter Secret Code

A 4 digit code must be entered to view a blocked program or change rating settings.

- 1** **Display MAIN MENU.**
Press ACTION.
- 2** **Display SET UP TV screen.**
1) Press **▲▼** to select "TV."
2) Press ACTION to display.
- 3** **Select LOCK.**
1) Press **▲▼** to select.
2) Press **▶** to display.
- 4** **Enter your secret code.**
1) Press **▲▼** to select a number.
2) Press **▶** (or **◀**) to set.
• Repeat step 4 until 4-digits have been selected.
• Take care that you are not observed entering the secret code.
- 5** **Save 4-DIGIT CODE.**
Press ACTION.
- 6** **Display LOCK menu for rating screen.**
Press ACTION and go to: MOTION PICT. Ratings, or TV PARENTAL Ratings
Or,
to exit, press ACTION four times.



Change your secret code
• You will need your current code.
Do steps 1~4. In step 5, press ADD/DLT to clear current code.
Repeat steps 4 and 5 to enter new code.

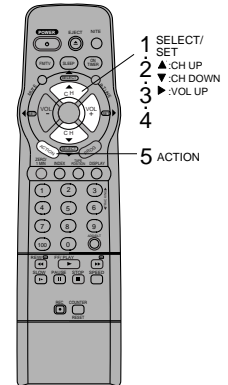
Setup MOTION PICT. (PICTURE) Ratings

If LOCK menu is not displayed, do "Enter Secret Code" steps.

- 1** **Select MOTION PICT. STATUS.**
1) Press **▲▼** to select.
2) Press **▶** to set "ON" or "OFF."
If you select MOTION PICT. STATUS:
■ "ON" → V-Chip Control is activated.
■ "OFF" → V-Chip Control is deactivated.
- 2** **Select CHANGE SETTINGS.**
1) Press **▲▼** to select.
2) Press **▶** to display.
- 3** **Select VIEW NR PROGRAMS?**
1) Press **▲▼** to select.
2) Press **▶** to set "YES" or "NO."
- 4** **Select ratings to be blocked. (See right.)**
1) Press **▲▼** to select.
2) Press **▶** to set.
- 5** **Redisplay LOCK menu to continue setup.**
Press ACTION and go to TV PARENTAL Ratings
Or,
to exit, press ACTION four times.

Process of V-Chip Control Feature

Enter Code → Setup → Blocking



MOTION PICTURE RATINGS	
G	GENERAL AUDIENCE: All ages admitted.
PG	PARENTAL GUIDANCE: Some material may not be suitable for children.
PG-13	PARENTS CAUTIONED: Some material may be inappropriate for children under 13.
R	RESTRICTED: Under 17 requires accompanying parent or adult children.
NC-17	OVER AGE 17 ONLY: No one 17 and under admitted.
X	ADULTS ONLY:

V-Chip Control Feature (continued)

Setup TV PARENTAL Ratings

If LOCK menu is not displayed, do "Enter Secret Code" steps.

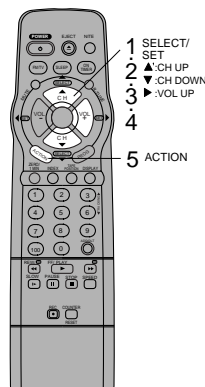
- 1** **Select TV PARENTAL STATUS.**
1) Press **▲▼** to select.
2) Press **▶** to set "ON" or "OFF."
If you select TV PARENTAL STATUS:
■ "ON" → V-Chip Control is activated.
■ "OFF" → V-Chip Control is deactivated.
- 2** **Select CHANGE SETTINGS.**
1) Press **▲▼** to select.
2) Press **▶** to display.
- 3** **Select VIEW NR PROGRAMS?**
1) Press **▲▼** to select.
2) Press **▶** to set "YES" or "NO."
- 4** **Select ratings to be blocked.**
1) Repeatedly press **▲▼** to select.
2) Press **▶** to set.
• Ratings which are highlighted in GREEN will be blocked, when not highlighted (white letters), these will not be blocked.
- 5** **End setup.**
Press ACTION four times.

Note

You may select from standard TV ratings (chart 1), or customize to a specific content rating (chart 2.)

Process of V-Chip Control Feature

Enter Code → Setup → Blocking



TV PARENTAL GUIDE RATINGS: Chart 1

TV-Y	FOR ALL CHILDREN: Content specifically geared to young viewers ages 2-8.
TV-Y7	FOR AGE 7 AND OLDER: May contain mild physical or comedic violence which may frighten children under 7.
TV-G	GENERAL AUDIENCE: Contains little or no violence, strong language, or sexual dialogue or situations.
TV-PG	PARENTAL GUIDANCE: May contain infrequent coarse language, limited violence, some suggestive sexual dialogue and situations.
TV-14	PARENTS CAUTIONED: May contain sophisticated themes, sexual situations, strong language, and more intense violence.
TV-MA	MATURE AUDIENCE: May contain mature themes, profane language, graphic violence, and sexual situations.

TV PARENTAL GUIDE RATINGS: Chart 2

FV	Fantasy Violence
V	Violence
S	Sexual Situations
L	Adult Language
D	Sexually Suggestive Dialogue

Process of V-Chip Control Feature

Enter Code → Setup → Blocking

Blocking Message

<When V-Chip Control is activated>

PROGRAM RATING EXCEEDED
RATING: PG-13

STOP 11:00AM ABC
-0:12:34 SP
RATING: PG-13

• If V-Chip Control is activated, and a program or movie exceeds the ratings you have set, a message will appear on a black background and sound is muted.

• If DISPLAY is pressed, even when V-Chip control is deactivated, rating is displayed on-screen.

To Continue Viewing a Blocked Program
After entering your 4 digit secret code, go to step 1 and select "OFF" to deactivate V-Chip Control.
• The previous MOTION PICT. and TV PARENTAL settings will be restored.

5 SERVICE NOTES (PLEASE READ)

5.1. SERVICE NOTES

5.1.1. SIMPLIFIED FAULT FINDING DATA

Simplified Self-Diagnostic System facilitates finding the cause of the fault. 4 digit for fault code and communication for IIC bus code will be displayed on TV screen.

The Simplified Fault finding data is stored in the Memory IC (IC6004). This data is cleared after it is displayed and then, the POWER button is pressed back on.

1. Turn off power by pressing the **POWER key on Remote Control**(Power LED ON). Then, press FF and REW buttons on unit together for over 3 seconds.

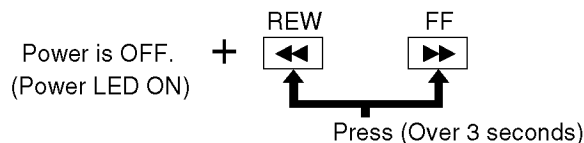


Fig. 1-1

2. TV power goes on and the unit goes into service mode. 4 digit for fault code and communication for IIC bus code will be displayed.

Code Digit Position

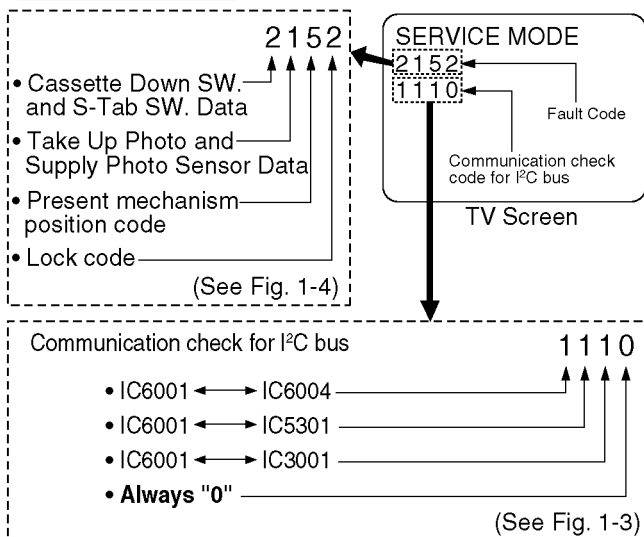


Fig. 1-2

(Communication check for I²C bus)

Explanation of Codes	Code No.			
Communication check for I²C bus (IC6001 ↔ IC6004) ----- NG OK	0	1		
Communication check for I²C bus (IC6001 ↔ IC5301) ----- NG OK		0	1	
Communication check for I²C bus (IC6001 ↔ IC3001) ----- NG OK			0	1
Always "0"				0

Fig. 1-3

(Fault Code)

Explanation of Codes	Code No.			
S-Tab SW. Data • S-Tab SW. is off. • S-Tab SW. is on.	1	2		
Take Up and Supply Photo Sensor Data • No light detected at either sensor. • Take Up Photo Sensor detected at beginning of tape. • Supply Photo Sensor detected at end of tape. • Light detected at both sensors.		1	2	
		3		
		4		
Present Mechanism Position Code Mechanism Position is indicated. (Refer to Fig. 1-5.)			1	2
			3	4
			5	6
			7	8
			9	A
			B	C
			D	
Lock Code (See Note) • VCR is not in shut-off condition. • Reel lock. • Cylinder lock. • Exceeds loading/unloading time. (Mechanism Lock) • Exceeds Cassette loading/unloading time. (Cassette Lock) Tape Unloading (direction) Tape Loading (direction)			0	1
			2	3
			1	4
			2	4

Fig. 1-4

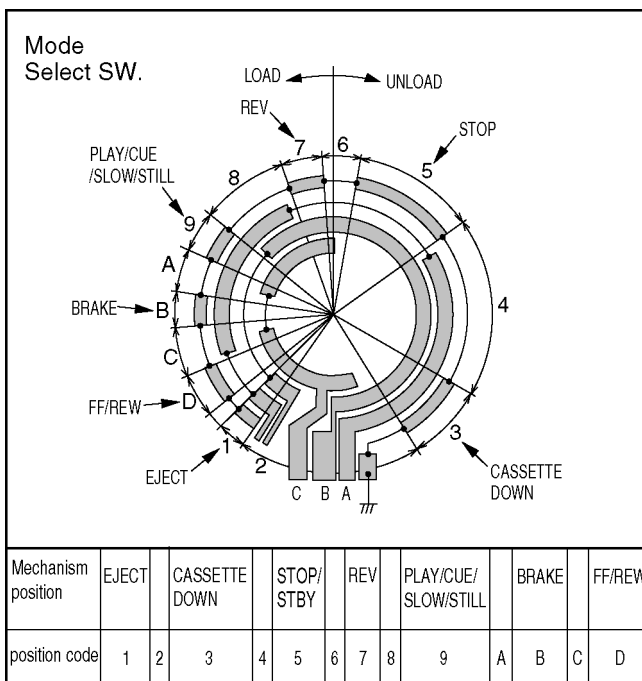
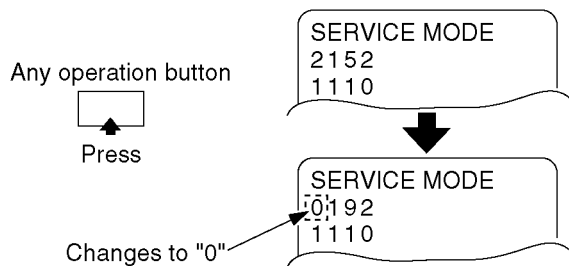


Fig. 1-5

Note:

When 1 to 4 listed in Lock code occurs, the VCR stops and all VCR function buttons except for power become non-operational.

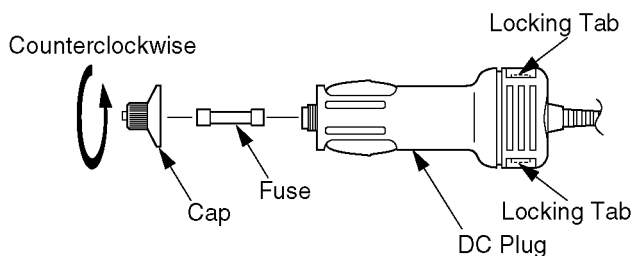
3. Press any operation button except for POWER on either the unit, or the remote to detect that a key has been pressed.
The 1st digit changes to "0" only when key is detected.



5.1.2. HOW TO APPLY DC, AC POWER SUPPLY

1. DC Power Supply

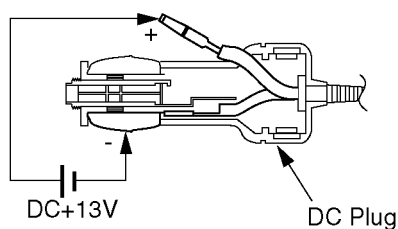
- Remove the Cap by turning it counterclockwise.
- Pull out the Fuse from DC Plug.
- Release the 2 Locking Tabs.



- Connect the DC cord to the input jack (P803) of unit, and then apply +13V DC Power Supply to DC plug as shown.

Note:

Use DC Power Supply source with over 10A capacity.



2. AC Power Supply

Connect the AC cord to the input jack (P801) of unit, and plug AC cord into an AC wall outlet.

5.1.3. SERVICE POSITION

The Basic Service Position does not require the use of Extension Cables. However, for more extensive servicing, Extension Cables should be used.

5.1.3.1. Basic Service Position

Service Position	Purpose
Service Position (1)	Power Supply C.B.A. check TV Main C.B.A. check
Service Position (2)	Mechanism check Mechanical adjustment Electrical adjustment
Service Position (3)	Main C.B.A. check

CAUTION:

HOT CIRCUIT(Primary circuit) exists on the TV Main C.B.A. and the Power Supply C.B.A.

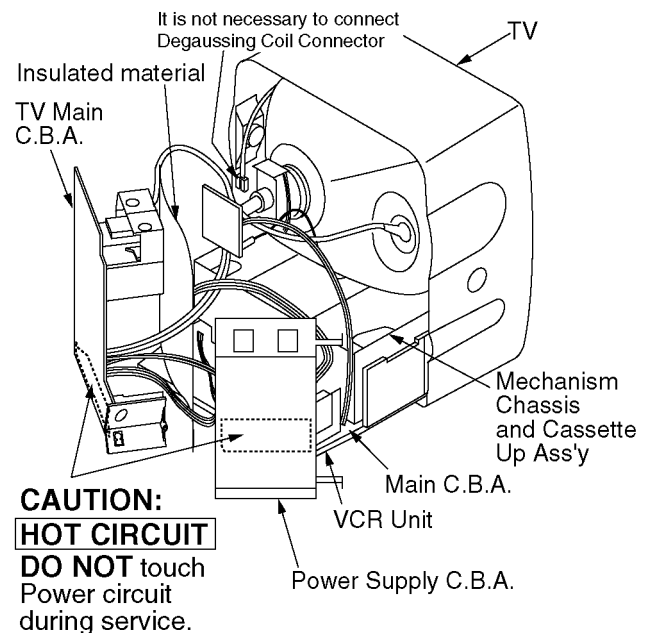
Use extreme care to prevent accidental shock when servicing.

Note:

- When disassembling/assembling, refer to "Cabinet Section" in Disassembly/Assembly Procedures.
- Be sure to use only insulated material on portions which have a possibility of shorting.

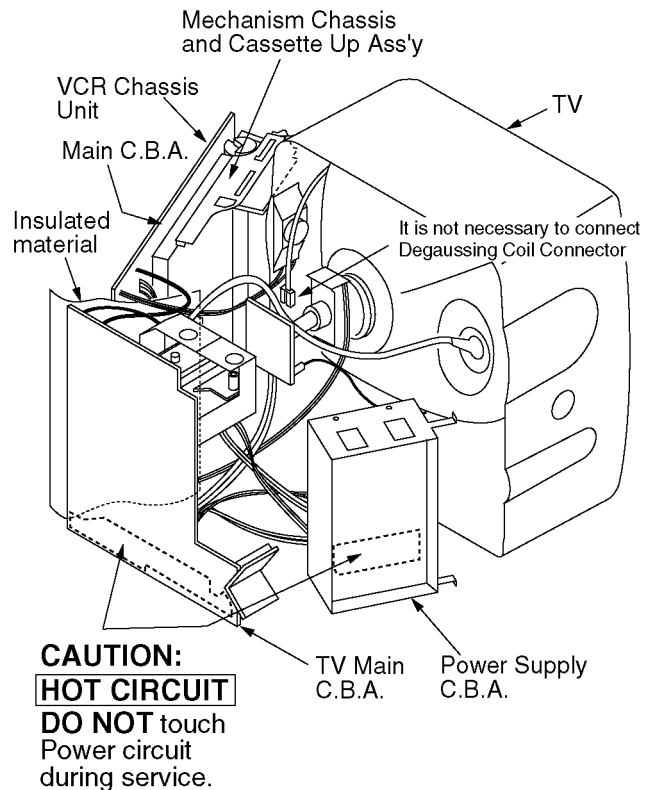
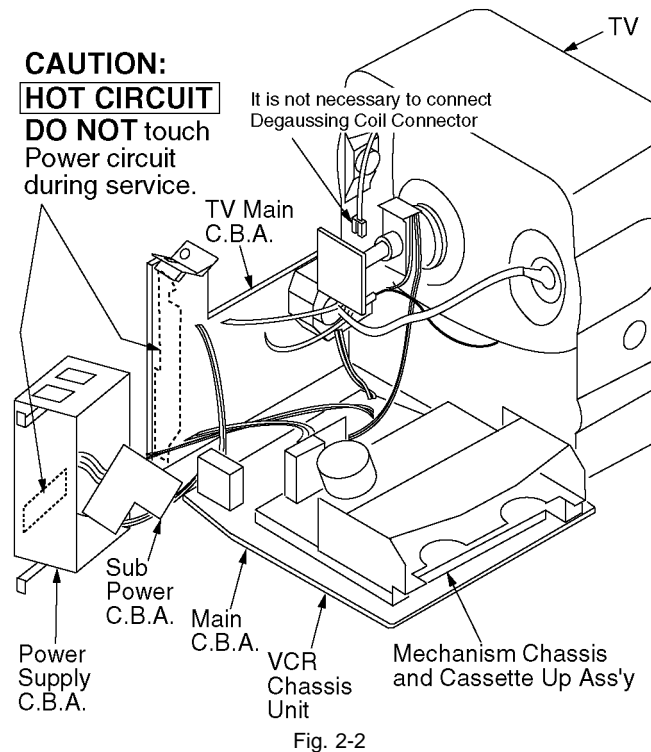
5.1.3.1.1. Service Position (1)

- Remove Rear Cover, Power Supply C.B.A., and TV Main Unit.
- Remove TV Main C.B.A. from the TV Main Unit. Then, place the TV Main C.B.A. and Power Supply C.B.A. as shown.



5.1.3.1.2. Service Position (2)

1. Remove Rear Cover, VCR Unit, Power Supply C.B.A., and TV Main Unit.
2. Remove Top Shield Plate and the frame from VCR Unit.
3. Remove TV Main C.B.A. from the TV Main Unit.
4. Place the VCR Chassis Unit, TV Main C.B.A. and Power Supply C.B.A. as shown.



5.1.3.1.3. Service Position (3)

1. Remove Rear Cover, VCR Unit, Power Supply C.B.A. and TV Main Unit.
2. Remove Top Shield Plate and the frame from VCR Unit.
3. Remove TV Main C.B.A. from the TV Main Unit.
4. Place the VCR Chassis Unit, TV Main C.B.A. and Power Supply C.B.A. as shown.

5.1.3.2. Service Position with Extension Cable Kit

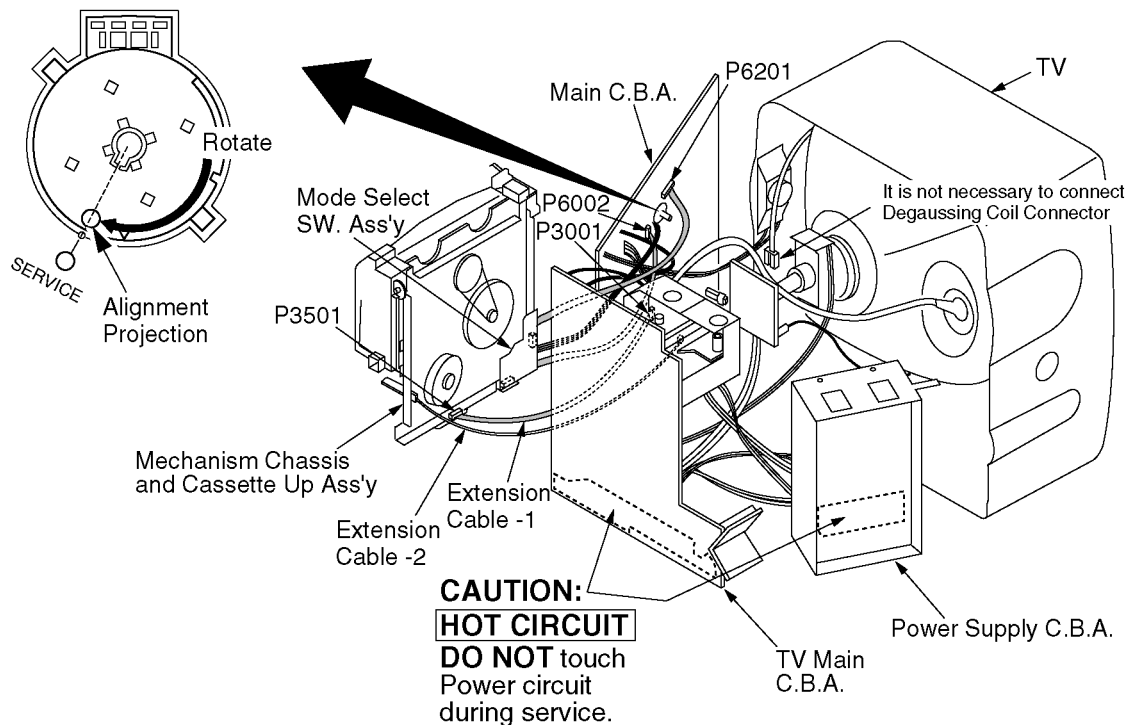
(Refer to "How to place the unit into Service Position with Extension Cables")

In Service Position with Extension Cable Kit, mechanism check

from the Bottom Side of Mechanism Chassis and Capstan Stator Unit (Capstan Motor Drive, Loading Motor Drive Circuit) check with power on condition can be performed.

Service Position

Mode Select SW. on Main C.B.A.



Extension Cables connection on Mechanism Chassis and Cassette Up Ass'y/Main C.B.A.

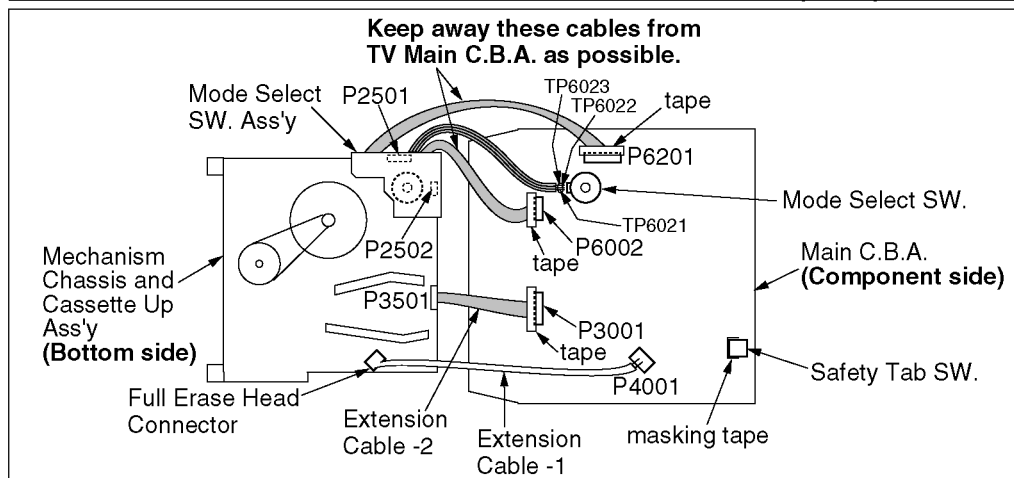


Fig. 2-4

CAUTION:

HOT CIRCUIT (Primary circuit) exists on the TV Main C.B.A. and the Power Supply C.B.A.

Use extreme care to prevent accidental shock when servicing.

Note:

When disassembling/assembling, refer to "Cabinet Section" in Disassembly/Assembly Procedures.

5.1.3.2.1. Extension Cable Kit (VUZS0002)

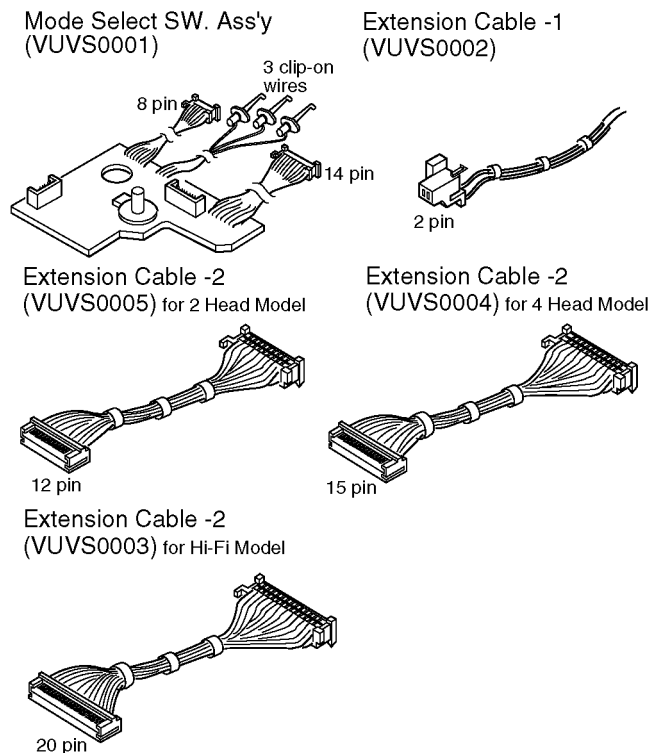


Fig. 2-5

Note:

3 types of Extension Cable -2 are included in this kit. Since there is a difference in the number of P3501 Head Amp C.B.A. pins between 2 Head, 4 Head, and Hi-Fi models, be sure to use the proper cable.

5.1.3.2.2. How to place the unit into Service Position with Extension Cables

1. Remove Rear Cover, VCR Unit, Power Supply C.B.A., and TV Main Unit.
2. Remove the Top Shield Plate, Mechanism chassis and Cassette Up Ass'y.
3. Remove the TV Main C.B.A. from the TV Main Unit.
4. Connect the Extension Cables as follows:

- Extension Cable -1: Full Erase Head Connector on the Mechanism Chassis Unit ~ P4001 on the Main C.B.A.

Note: No change in performance if pins are reversed.

- Extension Cable -2: P3501 on the Head Amp C.B.A. ~ P3001 on the Main C.B.A.

- Mode Select SW. Ass'y: a) 3 Clip-on Wires ~ Test Points on the Main C.B.A.

Red Wire ~ TP6021
Orange Wire ~ TP6022
Yellow Wire ~ TP6023

- b) 8 Pin Connector ~ P6002 on the Main C.B.A.

- c) 14 Pin Connector ~ P6201 on the Main C.B.A.

- d) Set Mode Select SW. on the Mode Select SW. Ass'y to EJECT position and install onto Mechanism Chassis

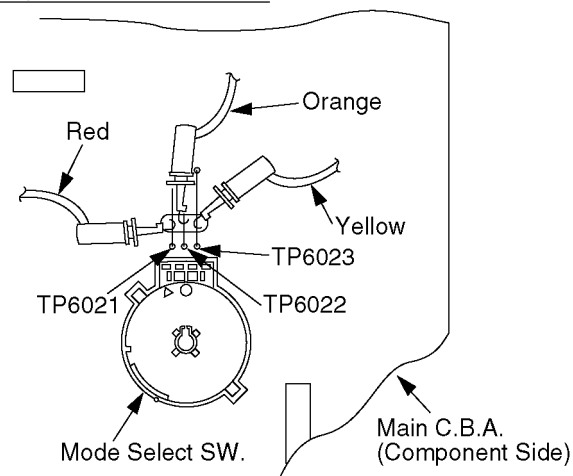
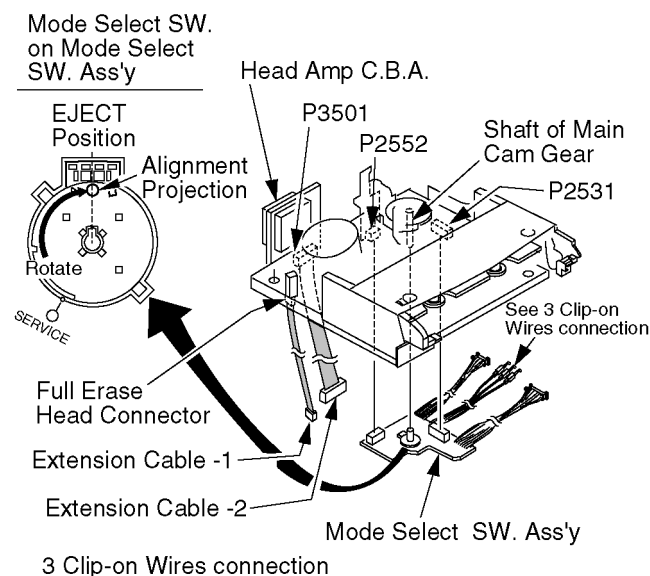


Fig. 2-6

5. Place the VCR Chassis Unit, TV Main C.B.A., and Power Supply C.B.A. as shown.
6. Secure the Extension Cables with tape as shown. When recording, cover the Safety Tab SW. with masking tape to turn this SW. on.

Note:

To avoid damaging the connectors on Main C.B.A., it is necessary to secure connectors with tape as shown.

7. Set Mode Select SW. on the Main C.B.A. to Service Position.
 8. Plug the AC plug into an AC outlet.
 9. Insert a cassette.
- The power comes on, the tape is fully loaded, and the unit goes into the STOP Mode.
10. Place a jumper between TP6001 and GND to place the unit in Service Mode.
 11. Check and/or repair the unit.
 12. Press the STOP/EJECT button to eject the cassette.

Note:

When inserting a cassette again, remove the jumper between TP6001 and GND and insert the cassette. Then, reconnect the jumper.

13. After servicing, remove the jumper between TP6001 and GND to release the unit from Service Mode.

CAUTION:

HOT CIRCUIT (Primary circuit) exists on the TV Main C.B.A. and Power Supply C.B.A.

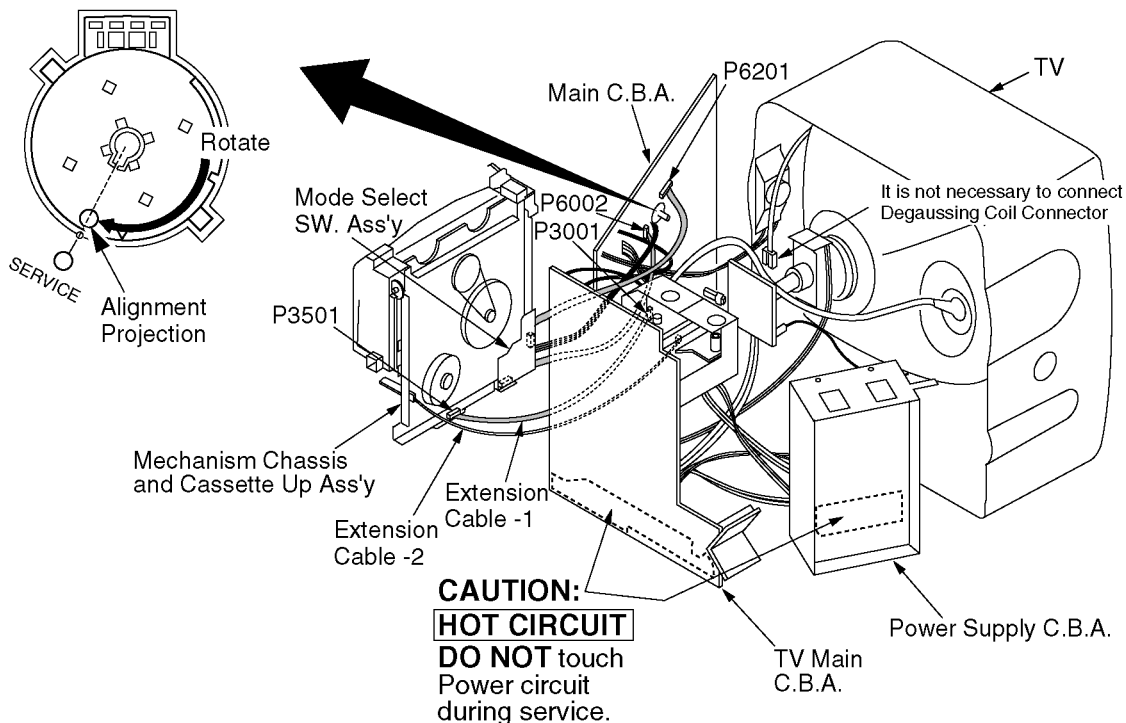
Use extreme care to prevent accidental shock when servicing.

Note:

When disassembling/assembling, refer to "Cabinet Section" in Disassembly/Assembly Procedures.

Service Position

Mode Select SW. on Main C.B.A.



Extension Cables connection on Mechanism Chassis and Cassette Up Ass'y/Main C.B.A.

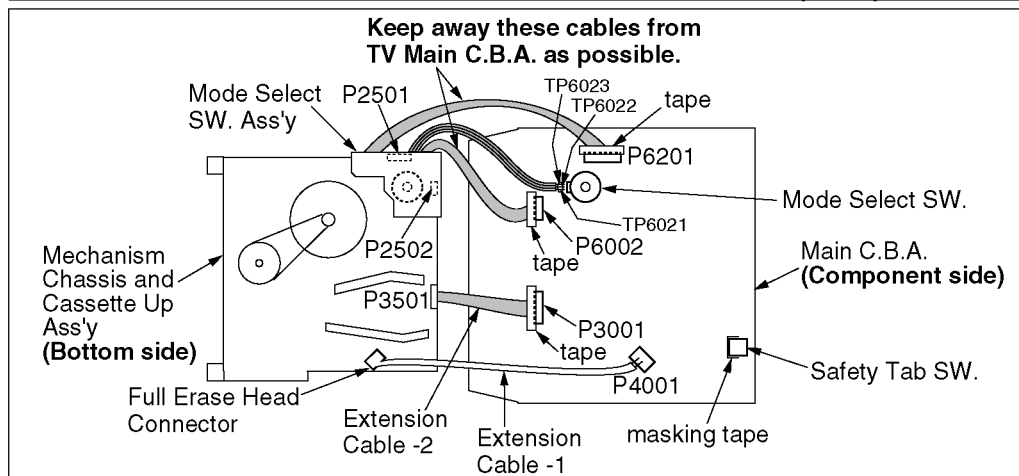


Fig. 2-7

5.1.4. HOT CIRCUIT

Primary circuit exists on the TV Main C.B.A. and Power Supply C.B.A.

This circuit is identified as "HOT" on the C.B.A. and in the Service Manual. Use extreme care to prevent accidental shock when servicing.

5.1.5. SERVICE MODE

In order to inhibit detection of the Supply & Takeup Photo Transistors, Reel Sensor, and Cylinder Lock, place a jumper between TP6001 and GND.

In this mode, Mechanism movement can be confirmed. When removing Cassette Up Ass'y, it can be confirmed without a cassette.

To release from this mode, remove the jumper between TP6001 and GND.

5.1.6. CAUTION FOR INSTALLATION OF VCR UNIT

CAUTION:

Opener Lever may be damaged when VCR Unit is installed, with Cassette Door-Lid and Opener Lever of Cassette Up Ass'y set incorrectly.

Install the VCR Unit as follows:

1. Swing the Cassette Door -Lid all the way open until the Cassette Door tab clears the Opener Lever.
2. Make sure that all guide tabs are aligned properly. Then, press the VCR Unit straight in.

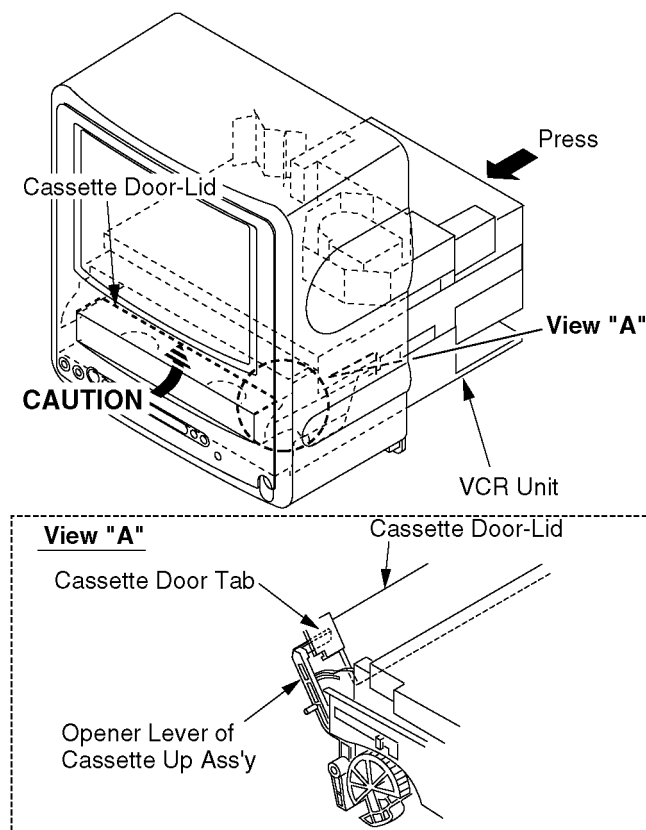


Fig. 3

5.1.7. HOW TO INITIALIZE MEMORY IC

After the Memory IC (IC6004) or MainC.B.A. is replaced, be sure to set the Default value to Memory IC as shown in "Memory IC Reference Table" below.

1. Press and hold STOP, PLAY, and VOL DOWN buttons on the unit together over 5 seconds with no cassette inserted. The adjustment overlay will appear to Enter EVR Adjustment mode.



Fig. 4-1

2. Set the Default value of all Control functions using a remote control as shown in "Memory IC Reference Table" below.

Note:

For Selecting Control functions and setting Default value, refer to "How to Enter EVR Adjustment Mode" and "How to Enter EVR PG Shifter Adjustment Mode" in Electrical Adjustment procedures.

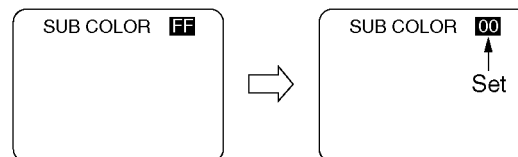


Fig. 4-2

3. Press and hold STOP, PLAY, and VOL DOWN buttons on the unit together over 5 seconds again or press the POWER button OFF to release EVR Adjustment Mode. The Default value will be written to Memory IC (IC6004).
4. Perform all EVR Adjustments. (Refer to "EVR Adjustment with the Remote Control" in Electrical Adjustment procedures.)

Memory IC Reference Table

Control functions	Address	Range	Default
SUB COLOR	00	C0 – FF, 00 – 3F	00
SUB TINT	01	E0 – FF, 00 – 1F	00
SUB BRIGHT	02	C0 – FF, 00 – 3F	F0
CONTRAST	03	C1 – FF, 00	00
SUB SHARPNESS	04	E0 – FF, 00 – 1F	00
R CUT -OFF	05	00 – 7F	1E
G CUT -OFF	06	00 – FD	3C
B CUT -OFF	07	00 – FD	3C
G DRIVE	08	00 – 7F	40
B DRIVE	09	00 – 7F	40
SUB CONTRAST	0A	00 – 0F	06
H CENTER	0B	00 – 0F	08
SUB V	0C	00	00
V SIZE	0D	00 – 7F	40
V POSITION	0E	00 – 7F	40
ANR CTL	10	00 – EF	85
PICTURE CTL	11	00 – EF	82
VV COLOR	12	C0 – FF, 00 – 3F	00
VV TINT	13	E0 – FF, 00 – 1F	00
VV SHARPNESS	14	E0 – FF, 00 – 1F	F8
PG SHIFTER	15	01 – FD	80

Note:

Address is not displayed on the TV screen.
Other Addresses except above are not used.

5.1.8. Method for Loading/Unloading of Mechanism

5.1.8.1. (Manual Method)

Turn the Main Cam Gear counterclockwise (for loading) or clockwise (for unloading) using needlenose pliers etc.

Note:

Do not use this method if Mechanism is jammed or locked.

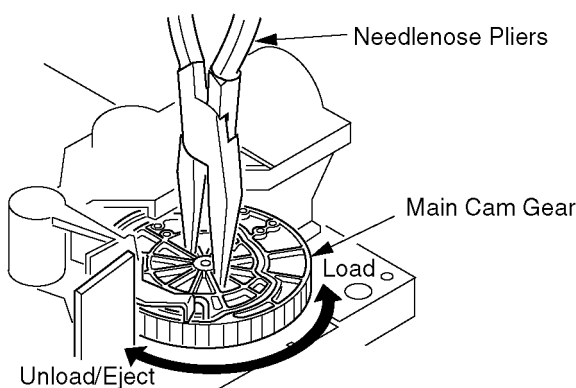


Fig. 5-1

5.1.8.2. (Electrical Method)

Remove the solder as shown and apply +10.0 VDC Power Supply (DC + to Portion "a," DC - to Portion "c").

Note:

Be careful not to let the DC Power Supply Unit GND contact the chassis GND. This may damage the Loading Motor Drive IC (IC 2501).

Be sure to apply DC + to Portion "a" of Motor P.C.B.

If DC + is applied to Portion "b", the Loading Motor Drive IC (IC2501) may be damaged.

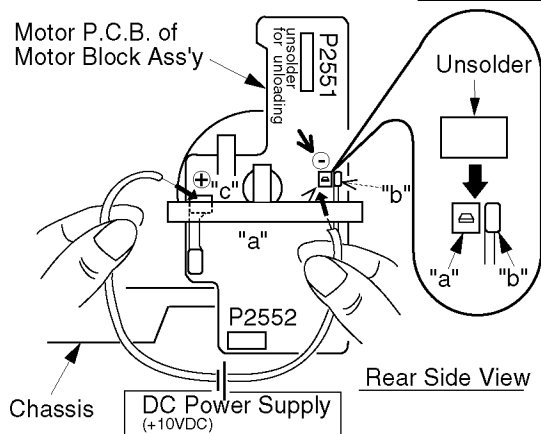


Fig. 5-2

Note:

Do not forget to solder Portions "a" and "b" after loading/unloading operation is completed.

When loading without a cassette, press Portion "a" on both sides of the Holder Unit of Cassette Up Ass'y so that the Levers clear the Tabs and Holes.

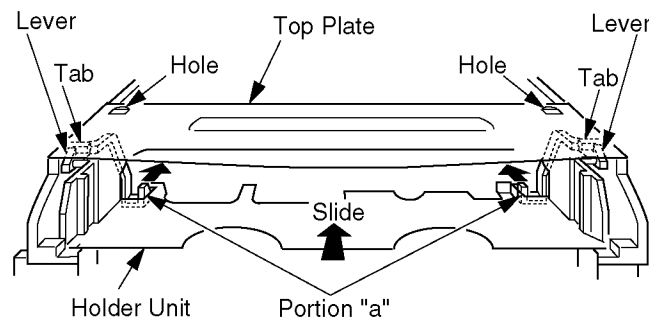


Fig. 5-3

5.1.9. HOW TO REMOVE A JAMMED TAPE

CAUTION:

Wiper Arm Unit may be damaged or its spring may be out of place when the jammed tape is removed by force.

Remove a jammed tape as follows:

5.1.9.1. Manual Method

When a tape jam is encountered, check the tape loading condition and use the following procedure to remove a tape jam.

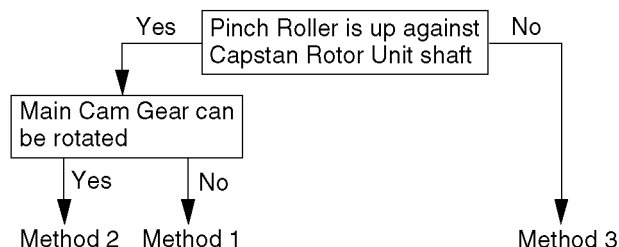


Fig. 6-1

5.1.9.1.1. Method -1:

1. While releasing 2 Locking Tabs (A) of Opener Piece, pull the Opener Piece up as far as you can.
2. Move the pin of Pinch Arm Unit out of the groove of the Main Cam Gear so that the Pinch Roller is separated from the shaft of the Capstan Rotor Unit.

Rear Side View

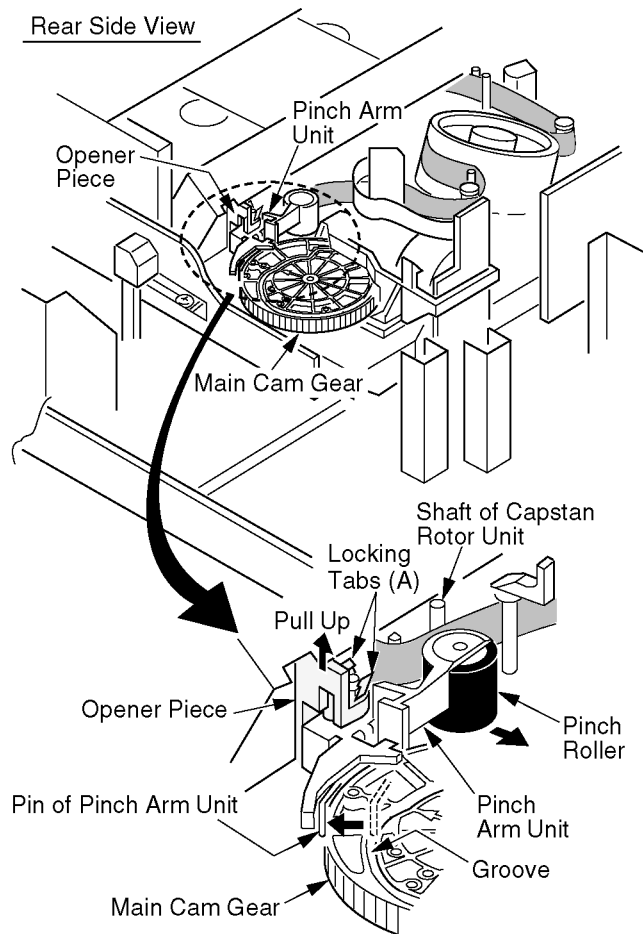


Fig. 6-2

3. Remove the tape from the tape path.
4. Rewind the tape into the cassette by rotating the Center Clutch Unit counterclockwise.
5. Unhook Spring (A) of the Drive Rack Unit.
6. Remove Screw (A).
7. Lift the Drive Rack Unit up so that the slot clears the guide tab. While pulling the Drive Rack Unit out far enough so that it clears the Drive Rack Arm, slide the Drive Rack Unit as indicated by the arrow to remove the cassette tape from the Cassette Up Ass'y.
8. Check the cause of mechanical trouble and repair.

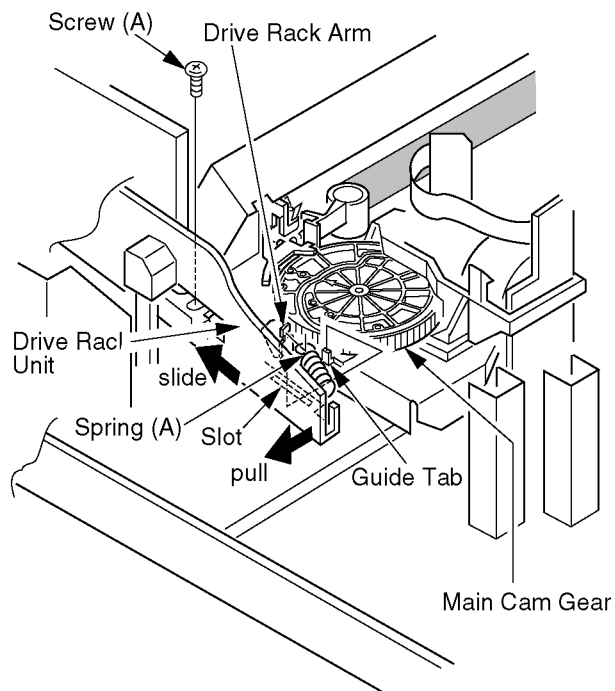


Fig. 6-3

5.1.9.1.2. Method -2:

1. Rotate Main Cam Gear clockwise with needlenose pliers, etc. so that the Pinch Roller is separated from the shaft of the Capstan Rotor Unit.
2. Perform Step 3 through Step 8 of Method -1.

5.1.9.1.3. Method -3:

1. Perform Step 3 through Step 8 of Method -1.

Note:

After repairing mechanical trouble, make sure that all gear alignments are correct, especially the Wiper Arm Unit and Drive Rack Unit of Cassette Up Ass'y. (Refer to "EJECT Position confirmation" of Mechanism Section in Disassembly/Assembly.)

5.1.9.2. Electrical Method

Electrical method can only be performed when the mechanism is moved by rotating the Main Cam Gear.

CAUTION:

If loading does not start in approx. 2 seconds after DC Power Supply is applied, DO NOT continue to apply DC Power Supply. Instead, perform "Manual Method."

1. Remove the solder as shown and apply +10.0 VDC Power Supply (DC + to Portion "a," DC - to Portion "c").
2. When the Loading Posts reach the fully unloaded position, remove the Power Supply.

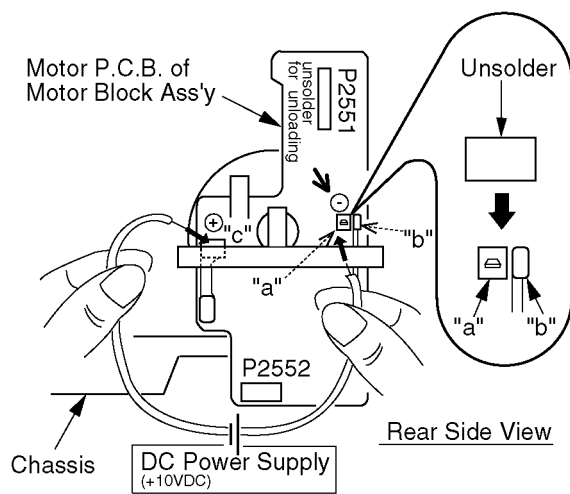


Fig. 7

Note:

Be careful not to let the DC Power Supply Unit GND contact the chassis GND. This may damage the Loading Motor Drive IC (IC 2501).

Be sure to apply DC + to Portion "a" of Motor P.C.B.

If DC + is applied to Portion "b", the Loading Motor Drive IC (IC2501) may be damaged.

3. Rewind the tape into the cassette by turning the Center Clutch Unit counterclockwise.
4. Eject the cassette by applying +10.0VDC Power Supply again.
5. After completing the removal procedure, solder Portion "a" and Portion "b."

5.1.10. WIRE AND LEAD POSITION DIAGRAM

After servicing, make sure that all wires, leads, and clampers are placed in their original position. It is important for the best operation of the unit.

Note:

No lead wires or flat cables should touch any heating parts. Use extreme care especially for followings.

- **Anode Lead:**
DO NOT touch the Picture Tube.
- **Focus Screen Leads:**
DO NOT touch Flyback Transformer Shield Case
DO NOT touch Power Supply C.B.A.
- **Deflection Yoke Connector Leads:**
DO NOT touch Power Supply C.B.A.

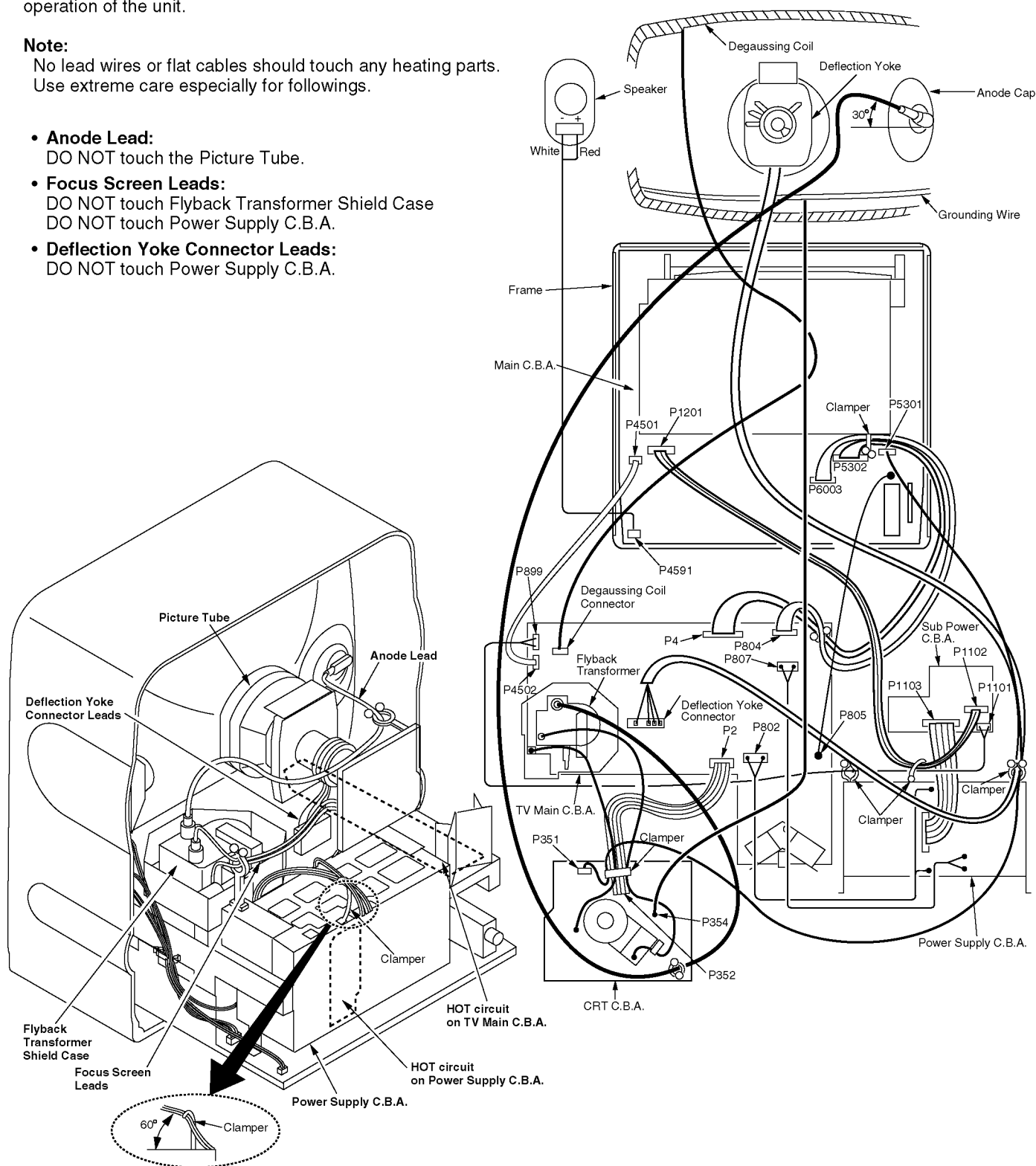


Fig. 8

5.1.11. DEFEATING THE AUTO TRACKING

To defeat the Auto Tracking Function, place the instrument in the STOP mode and place a jumper between TP6003 and TP6009 on the Main C.B.A. The tracking will be placed in the neutral position.

5.1.12. HOW TO SET TRACKING TO THE NEUTRAL POSITION

Ejecting the cassette tape and then reinserting it will reset the tracking to the Neutral position.

5.1.13. CYLINDER ROTATION IN STOP MODE

The cylinder will continue to rotate for approximately 5 minutes after the STOP button is pressed in Play mode etc. Eject the tape in order to stop the cylinder.

5.1.14. BLACK SCREWS ON THE CHASSIS

Black Screws are used on the Mechanism Chassis to identify screws that require adjustment.

5.1.15. HOW TO RESET ALL COMBINATION VCR MEMORY FUNCTIONS

To reset (clear) the select language, channel auto set and set clock functions to their initial power on condition (power on, no cassette inserted), hold down the PLAY and FF buttons on the unit together for more than 5 seconds.

Power will shut off.

5.1.16. HOW TO CONFIRM AUTO CLOCK SET FEATURE

1. Connect an RF cable from the output of one unit to the input of the test unit.
2. Select corresponding RF channels.
3. Playback a recording of P.B.S. channel including clock set data and confirm this feature.

5.1.17. VARIABLE VOLTAGE ISOLATION TRANSFORMER

An Isolation Transformer should always be used during the servicing of Combination VCR whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect Combination VCR from being damaged by accidental shorting that may occur during servicing.

Also, when troubleshooting the above type of Power Supply Circuit, a variable isolation transformer is required in order to increase the input voltage slowly.

5.1.18. SPECIAL NOTE

All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" section of this service manual.

5.1.19. REPLACEMENT PROCEDURE FOR LEADLESS (CHIP) COMPONENTS

The following procedures are recommended for the replacement of the leadless components used in this unit.

1. Preparation for replacement

a. Soldering Iron

Use a pencil-type soldering iron that uses less than 30 watts.

b. Solder

Eutectic Solder (Tin 63%, Lead 37%) is recommended.

c. Soldering time

Do not apply heat for more than 4 seconds.

d. Preheating

Leadless capacitor must be preheated before installation. - (266°F ~ 302°F)

(130°C ~150°C) for about two minutes.

Note:

a. Leadless components must not be reused after removal.

b. Excessive mechanical stress and rubbing of the component electrode must be avoided.

2. Removing the leadless component

Grasp the leadless component body with tweezers and alternately apply heat to both electrodes. When the solder on both electrodes is melted, remove the leadless component with a twisting motion.

Note:

Do not attempt to lift the component off the board until the component is completely disconnected from the board by a twisting action.

Be careful not to break the copper foil on the printed circuit board.

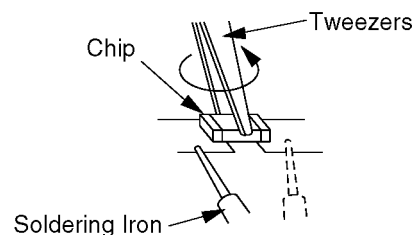


Fig. 9-1

3. Installing the leadless component

a. Presolder the contact points on the circuit board.

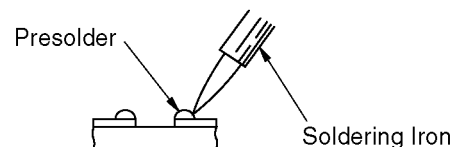


Fig. 9-2

b. Press the part downward with tweezers and solder both electrodes as shown below.

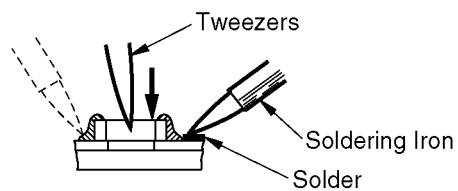


Fig. 9-3

Note:

Do not glue the replacement leadless component to the circuit board.

5.1.20. MODEL NO. IDENTIFICATION MARK

Use Marks shown in the chart below to distinguish the different models included in this Service Manual.

MODEL	MARK
PV-M939	A
PV-M949W	B
PV-M939-K	C
Not Used	Z

Note:

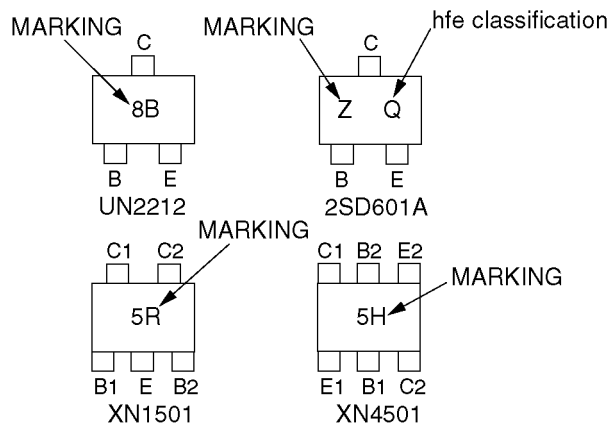
Refer to Item 3 of Schematic Diagram Notes of Schematic Diagram and Circuit Board Layout Notes, for mark "Z."

5.2. IC, TRANSISTOR AND CHIP PART INFORMATION

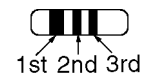
GENERAL C.B.A./ASS'Y PARTS			
 2SC2785, 2SA1175 MN3885S, AN3371SB, AN3845SC	 2SC945A, 2SA733, 2SC1684, 2SC1473A, 2SA1767, 2SB1221, 2SC1473, 2SC2482, 2SC2482KT, 2SC2631 AN5265, AN3809K	 2SC4015, 2SB1322A 2SD637, 2SD2259, 2SD1858	 2SD2586LBK, 2SB940 2SD601, 2SD601A, 2SB709A, 2SD814A, 2SD1030, 2SC2412K1, 2SA1037K146R 2SC3311A
MAIN C.B.A.			
 2SC3852, 2SD2375, 2SD2396 UN2112 (R1=22K, R2=22K), DTA124EK (R1=22K, R2=22K)	 2SC3852, 2SD2375, 2SD2396 DTC124EK (R1=22K, R2=22K), UN2212 (R1=22K, R2=22K)	 AN5367FB, AN3479FBP, D784928YG102 IMX1, XN4501, HN1C01F	 LC8632165K00, LC8632165K13, 24LC01B/P, AT24C01A10PI, M24C01-BN6, ST24C01FB6 T4101, VLTS0367 2SK374
TV MAIN C.B.A.	POWER SUPPLY C.B.A.	SUB POWER C.B.A.	
 LA7837	 ON3131-S.KT	 2SB789A, 2SD874A, 2SB766A	 XN4601 XN1501 IMZ1

5.2.1. HOW TO READ THE IDENTIFICATION MARK OF CHIP COMPONENTS.

MARKING	PART NO.	MARKING	PART NO.
B	2SB709A	5C	XN4601
E	2SB789A	5H	XN4501
F	2SA1037K146R	5R	XN1501
Y	2SD601	X1	IMX1
Y	2SD874A	1Z	2SD1030
Z	2SD601A	Z1	IMZ1
2B	2SK374	15	DTA124EK
6B	UN2112	25	DTC124EK
8B	UN2212		



5.2.2. HOW TO READ THE VALUES OF THE CYLINDRICAL TYPE CHIP COMPONENTS.



The widest color band must be read first for value.

1. RESISTOR

There are two types (ERD10LLJ... and ERD10TLJ...) of chip parts.

- ERD10LLJ : Refer to above type.
- ERD10TLJ : The narrow color band must be read first for value.

If this part is included in the parts list, be sure that the color band is read properly when servicing.

2. CAPACITOR

Because of the width of the color bands, the reading direction cannot be specified. However, the color band can be read on either side. Be sure to confirm the value using the schematic diagram.

CAUTION :

Once chip parts are removed, they must not be reused.
Always use a new part when installing a chip part.

6 DISASSEMBLY/ASSEMBLY PROCEDURES

6.1. CABINET SECTION

6.1.1. Disassembly Flowchart

Perform all disassembly procedures in the order described in the "Disassembly Flowchart" shown below. When reassembling, use the reverse procedure.

CAUTION:

Disconnect AC cord or DC cord before disassembly.

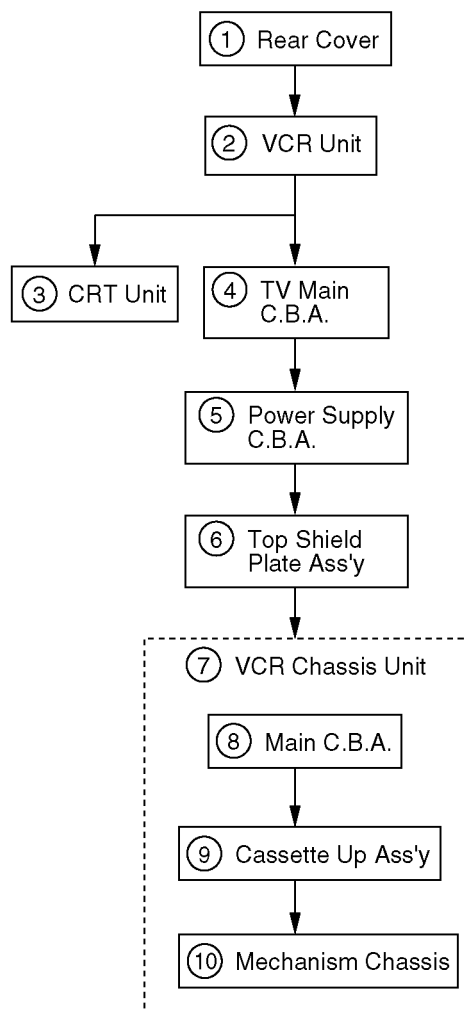


Fig. D1

6.1.2. Rear Cover

6.1.2.1. Disassembly Procedure

1. Remove 8 Screws (A). Then, pull the Rear Cover away.

Rear View

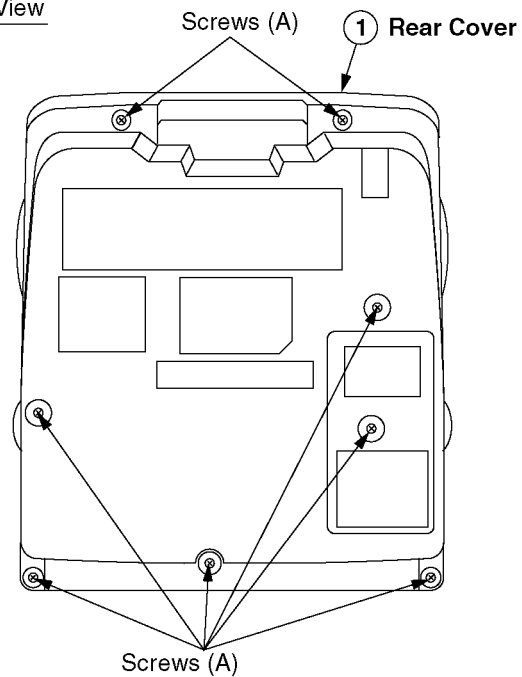
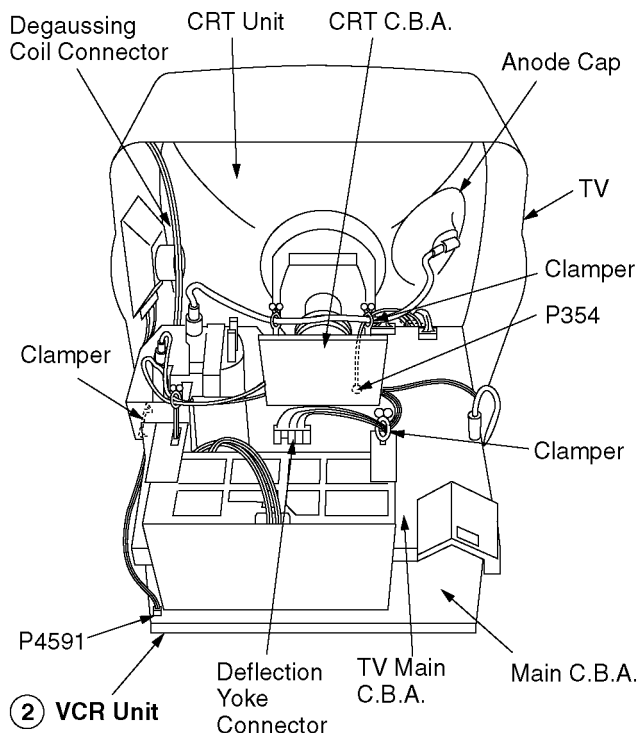


Fig. D2

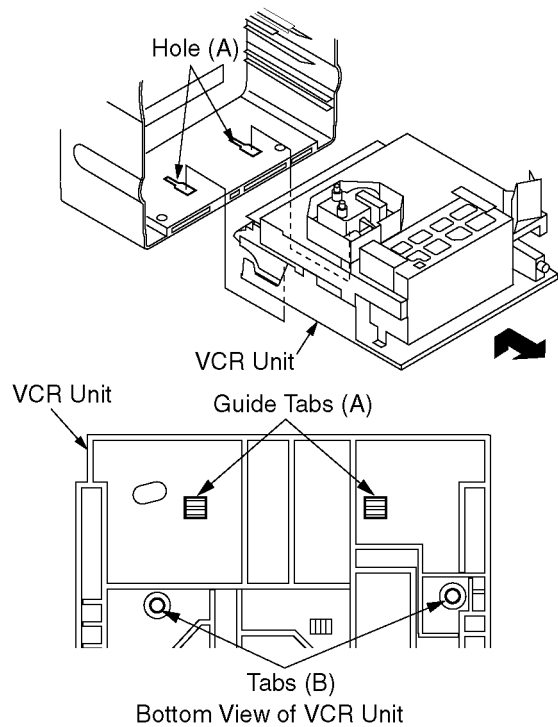
6.1.3. VCR Unit

6.1.3.1. Disassembly Procedure

1. Discharge the Anode to the CRT Ground. Then, remove the Anode Cap.
2. Disconnect the Connector P354 from the CRT C.B.A. and remove the lead from the clamper.
3. Carefully pull out the CRT C.B.A. from the CRT Unit.
4. Disconnect the Deflection Yoke Connector from the TV Main C.B.A. and remove the leads from the clamper.
5. Disconnect the Degaussing Coil Connector from the TV Main C.B.A.
6. Disconnect the Connector P4591 on the Main C.B.A. and remove the leads from the clamper.



7. Slightly lift up the rear side of the VCR Unit to release 2 Tabs (B).
8. Slide the VCR Unit out as far as it will go.
9. Then, lift up the VCR Unit to release 2 Guide Tabs (A) and remove the VCR Unit all the way out from the TV cavity.

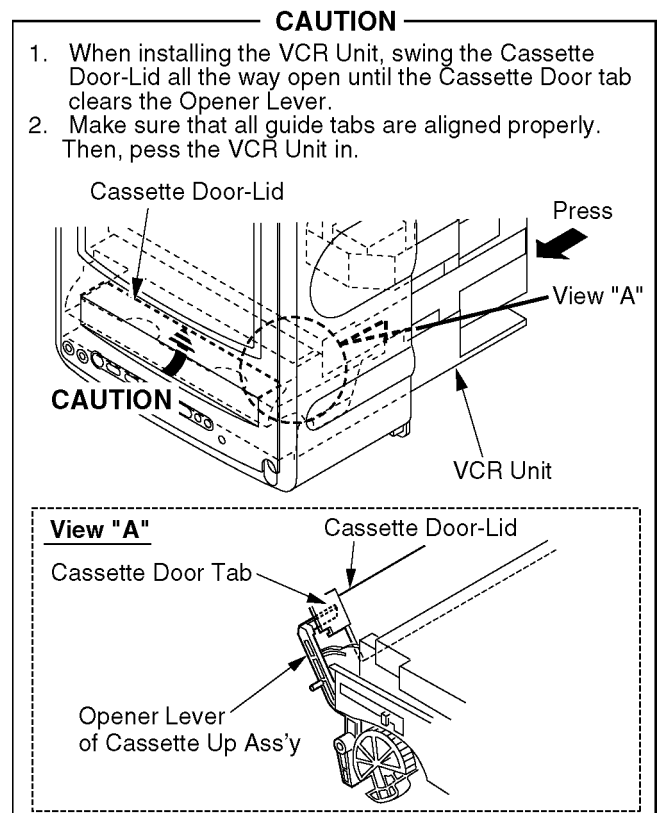


6.1.3.2. Reassembly Notes

CAUTION:

Opener Lever may be damaged when VCR Unit is installed, with Cassette Door-Lid and Opener Lever of Cassette Up Ass'y set incorrectly.

Install the VCR Unit as follows:



6.1.4. CRT Unit

6.1.4.1. Disassembly Procedure

1. Pull the Speaker Unit out.
2. Remove 4 Screws with Washers (A). Then, pull out the CRT Unit.

Note:

Place the Unit face down on a soft cloth before removing the CRT Unit.

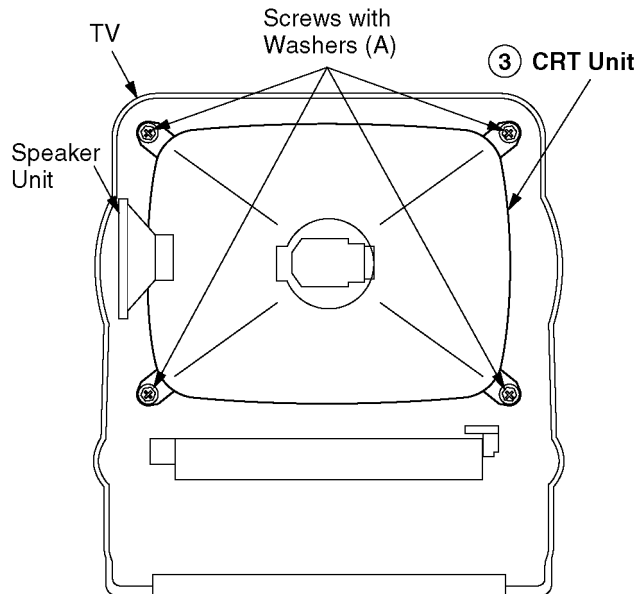


Fig. D4-1

3. Remove the Degaussing Coil.

Rear View

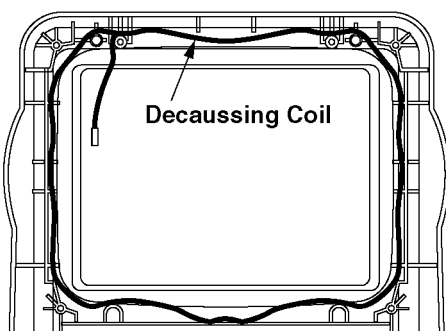


Fig. D4-2

6.1.4.2. Reassembly Notes

1. When installing Degaussing Coil, place it in the correct position.

6.1.5. TV Main C.B.A.

6.1.5.1. Disassembly Procedure

1. Remove 4 Screws (A).
2. Disconnect the Connectors P899 and P4502 from the TV Main C.B.A. and remove the leads from the clamper.
3. Disconnect the Connectors P804 and P4 from the TV Main C.B.A. and remove the leads from the clammers.
4. Disconnect the Connectors P802 from the TV Main C.B.A., and P351 from the CRT C.B.A.
Then, remove the leads from the clamper.
5. Disconnect the Connectors P807 from the TV Main C.B.A.
6. Disconnect the Connector P805 from the TV Main C.B.A. and remove the lead from the clamper.
Then, remove the TV Main C.B.A. with the TV Frame.

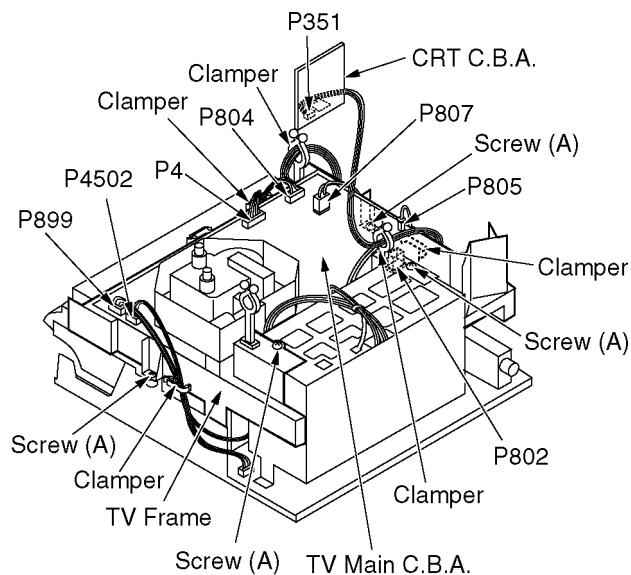
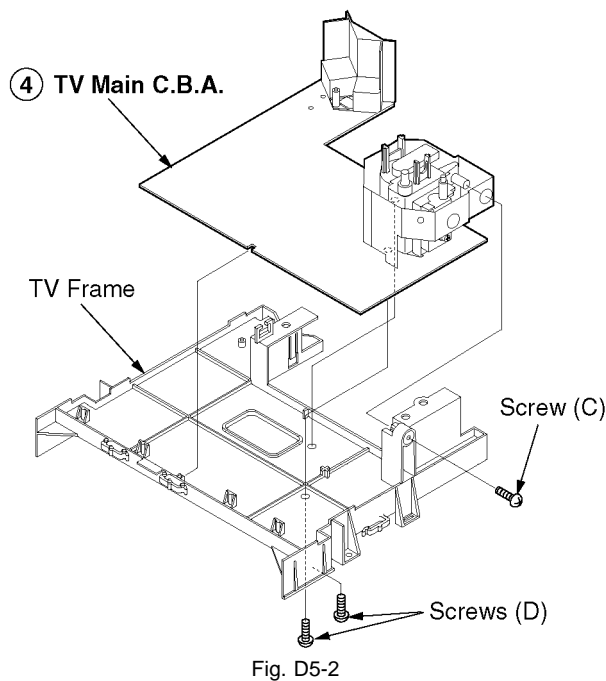


Fig. D5-1

7. Remove Screw (C) and 2 Screws (D).
Then, remove the TV Main C.B.A. from the TV Frame.



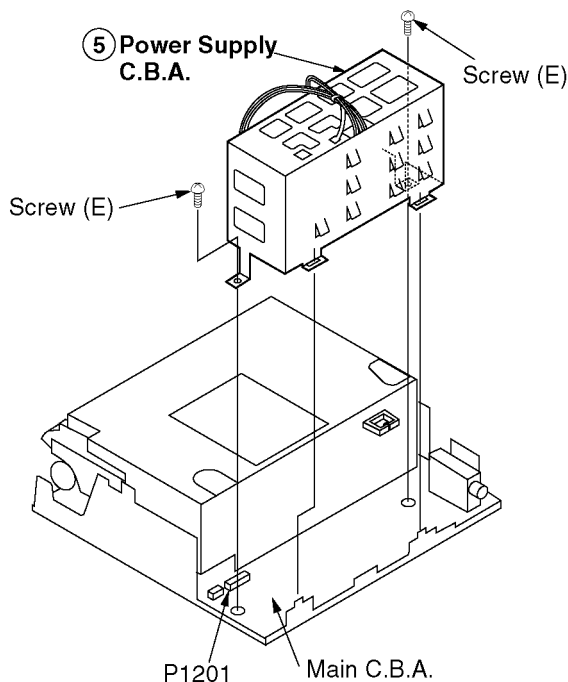
6.1.6. Power Supply C.B.A.

6.1.6.1. Disassembly Procedure

1. Remove 2 Screws (E).

2. Remove the Power Supply C.B.A.

Then, disconnect the Connector P1201 from the Main C.B.A.

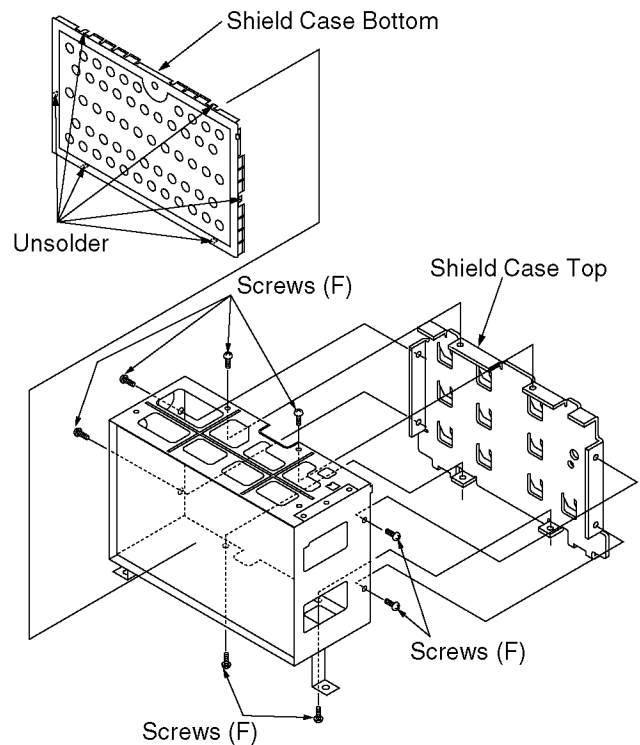


3. Remove 8 Screws (F).

Then, remove the Shield Case Top.

4. Unsolder the Shield Case Bottom.

Then, remove the Shield Case Bottom.



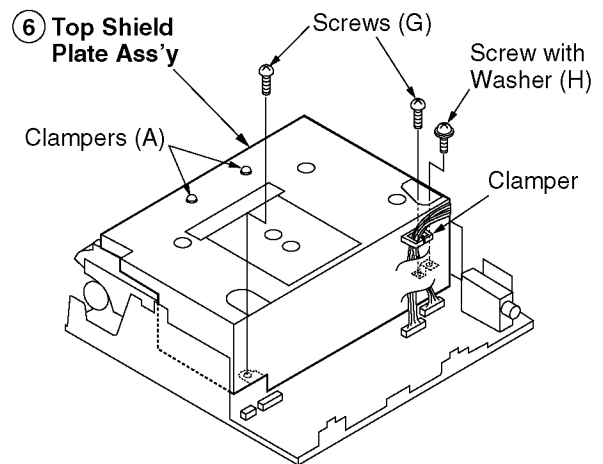
6.1.7. Top Shield Plate Ass'y

6.1.7.1. Disassembly Procedure

1. Remove 2 Screws (G) and Screw with Washer (H).

2. Release 2 Clampers (A) on the Top Shield Plate Ass'y and remove the leads from the clammer.

Then, remove the Top Shield Plate Ass'y.



6.1.8. VCR Chassis Unit

6.1.8.1. Disassembly Procedure

1. Slide the Holder Unit (refer to "METHOD FOR LOADING/UNLOADING OF MECHANISM" in Service Notes) to gain access to 2 Screws (J) for removal.

2. Remove 2 Screws (K) and Screw (L).

3. While releasing 2 Locking Tabs (A), lift the VCR Chassis Unit out of the Frame.

Note:

Work carefully so as not to break tab.

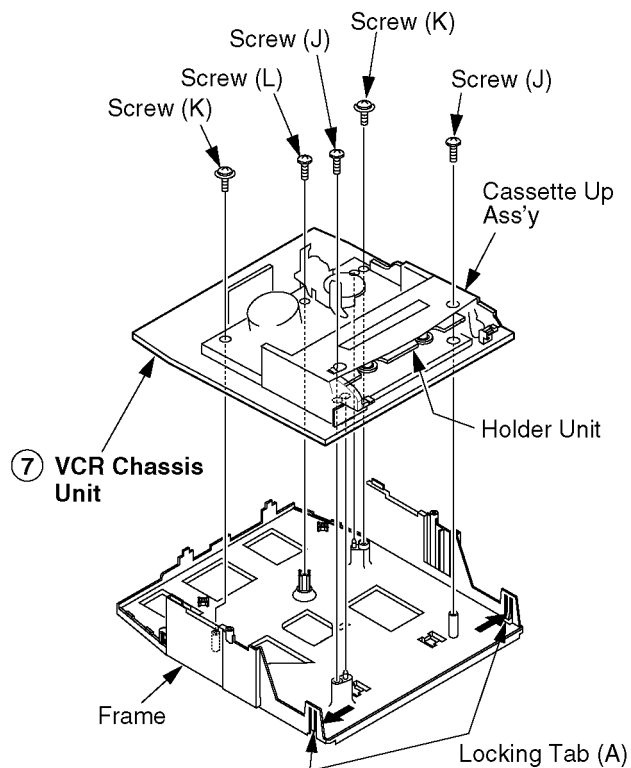


Fig. D8

6.1.8.2. Reassembly Notes

1. When installing 2 Screws (J), slide the Holder Unit (refer to "METHOD FOR LOADING/UNLOADING OF MECHANISM" in Service Notes) to tighten screws. Then, slide it back to the **EJECT** Position.

Make sure that Mechanism and Cassette Up Ass'y are in the **EJECT** Position. (Refer to " **EJECT** Position confirmation" of Mechanism Section in Disassembly/Assembly Procedures.)

6.1.9. Main C.B.A.**6.1.9.1. Disassembly Procedure**

1. Disconnect 4 Connectors of P2531, P2552, P3501 and P4001.
2. Carefully lift the Mechanism Chassis and Cassette Up Ass'y straight out from the Main C.B.A.

Note:

Work carefully so as not to break Sensor LED when lifting the Mechanism Chassis and Cassette Up Ass'y.

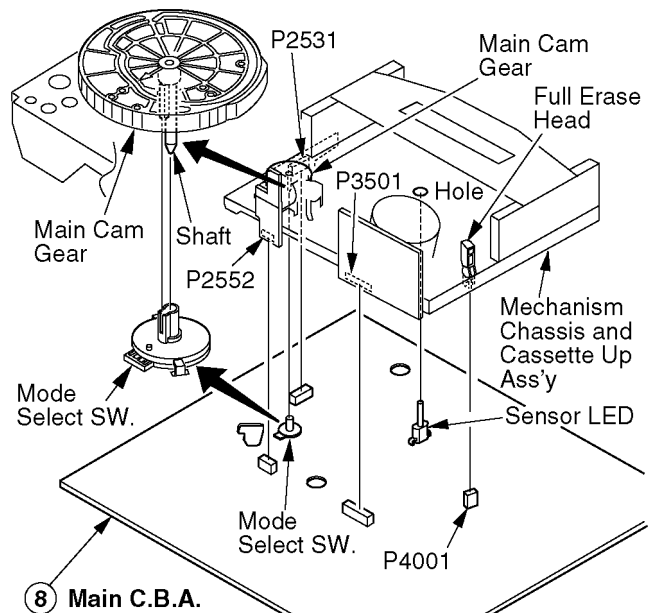


Fig. D9-1

6.1.9.2. Reassembly Notes**CAUTION****Installation of Mechanism Chassis and Cassette Up Ass'y onto Main C.B.A.**

1. Make sure the Mode Select SW. on the Main C.B.A. is in **EJECT** position. If not, rotate the Mode Select SW. until the alignment projection is in the **EJECT** Position.
2. Make sure the Mechanism and Cassette Up Ass'y are in the **EJECT** Position. (Refer to "**EJECT** Position confirmation" of Mechanism Section in Disassembly/Assembly Procedures.)

Mode Select SW. **EJECT** Position

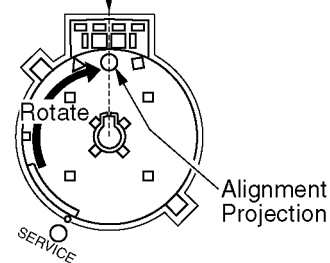


Fig. D9-2

3. Install the Mechanism Chassis and Cassette Up Ass'y straight onto the Main C.B.A. so that the Sensor LED clears the hole in the Mechanism Chassis and that 4 Connectors (P2531, P2552, P3501, and P4001) are aligned and seated securely.

6.1.10. Cassette Up Ass'y**6.1.10.1. Disassembly Procedure**

1. Slide Holder Unit (refer to "METHOD FOR LOADING/UNLOADING OF MECHANISM" in Service Notes) to gain access to 2 Screws (M) for removal.
2. Remove Screw (N).
3. Unhook Spring (A).
4. Slide the Cassette Up Ass'y towards the front to release Locking Tab (B). Then, lift it up and remove.

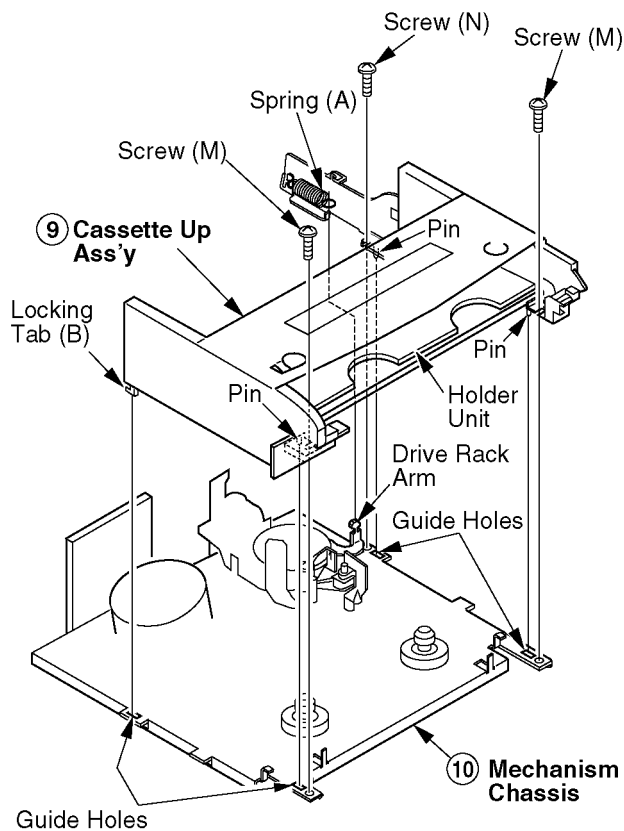


Fig. D10

6.1.10.2. Reassembly Notes

Installation of Cassette Up Ass'y

1. Confirm that the 3 pins and Locking Tab (B) under the Cassette Up Ass'y are in each of the 4 Guide Holes on the Mechanism Chassis when installing the Cassette Up Ass'y. Then, slide the Cassette Up Ass'y towards the back.
2. Slide Holder Unit (refer to "METHOD FOR LOADING/UNLOADING OF MECHANISM" in Service Notes) to tighten 2 Screws (M) and Screw (N).

Be careful not to tighten screws too much, or the Cassette Up Ass'y may be bent outward.

Then, slide it back to the EJECT Position.

3. Hook Spring (A) to the Drive Rack Arm on the Mechanism Chassis.

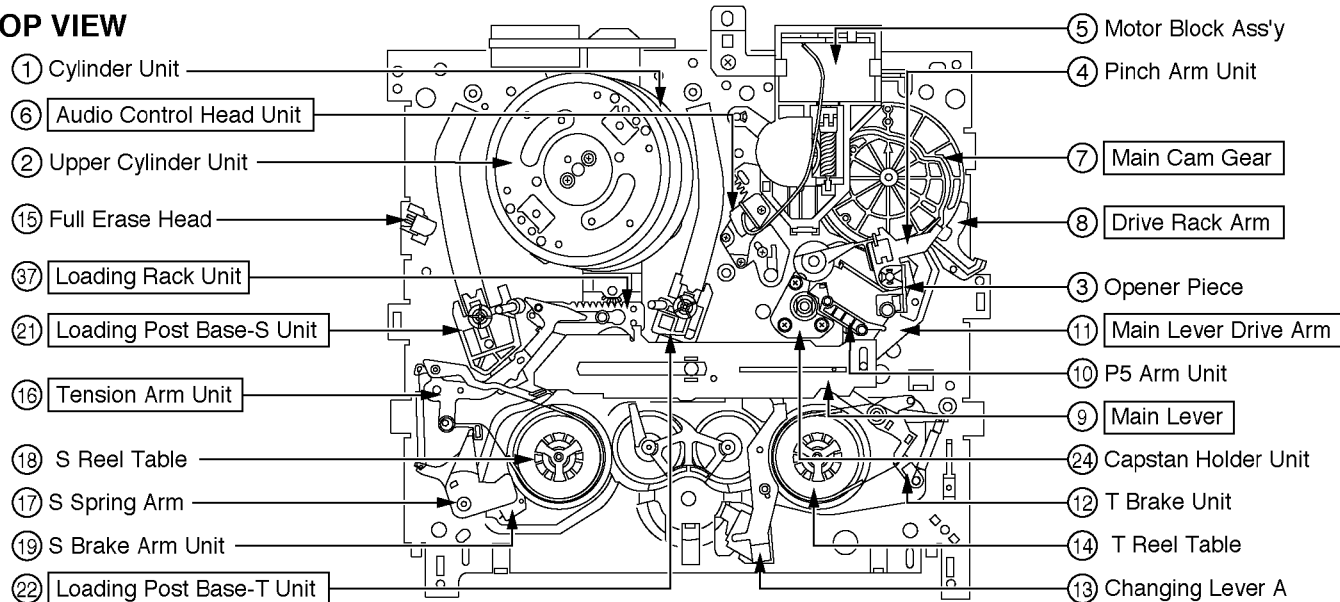
6.2.1. Disassembly Method

Step /Loc. No.	Part	Prior Step(s)	Step /Loc. No.	Part	Prior Step(s)	Step /Loc. No.	Part	Prior Step(s)	Step /Loc. No.	Part	Prior Step(s)
①	Cylinder Unit	-----	(11)	Main Lever Drive Arm	3, 4, 5, 7, 8, 9	(21)	Loading Post Base-S Unit	16	(31)	S Loading Arm Unit	30
②	Upper Cylinder Unit	-----	(12)	T Brake Unit	9	(22)	Loading Post Base-T Unit	9, 20	(32)	Center Clutch Unit	-----
③	Opener Piece	-----	(13)	Changing Lever A	9	(23)	Capstan Rotor Unit	-----	(33)	Changing Gear Spring	32
④	Pinch Arm Unit	3	(14)	T Reel Table	9, 12, 13	(24)	Capstan Holder Unit	23	(34)	Changing Gear	32, 33
⑤	Motor Block Ass'y	-----	(15)	Full Erase Head	-----	(25)	SS Brake Arm Unit	-----	(35)	Changing Lever-B	32, 33, 34
⑥	Audio Control Head Unit	5	(16)	Tension Arm Unit	-----	(26)	Junction C.B.A.	-----	(36)	Idle Arm Unit	32, 33, 34
⑦	Main Cam Gear	3, 4, 5	(17)	S Spring Arm	-----	(27)	Capstan Stator Unit	23, 25, 26	(37)	Loading Rack Unit	9, 30
⑧	Drive Rack Arm	3, 4, 5, 7	(18)	S Reel Table	16, 17	(28)	Sub Rotor	23, 25, 26, 27	(38)	Grounding Plate Unit	-----
⑨	Main Lever	-----	(19)	S Brake Arm Unit	9, 16, 17, 18	(29)	PCB Holder	23, 25, 26, 27	(39)	FG Head	-----
⑩	P5 Arm Unit	9	(20)	Main Lever Guide	9	(30)	T Loading Arm Unit	-----			

Step/Loc. No.: Order of steps in procedure. Part : Part to be removed or installed. Prior Step(s) : Steps to be completed prior to the current step

Perform all disassembly and alignments procedures in EJECT Position.

TOP VIEW



BOTTOM VIEW

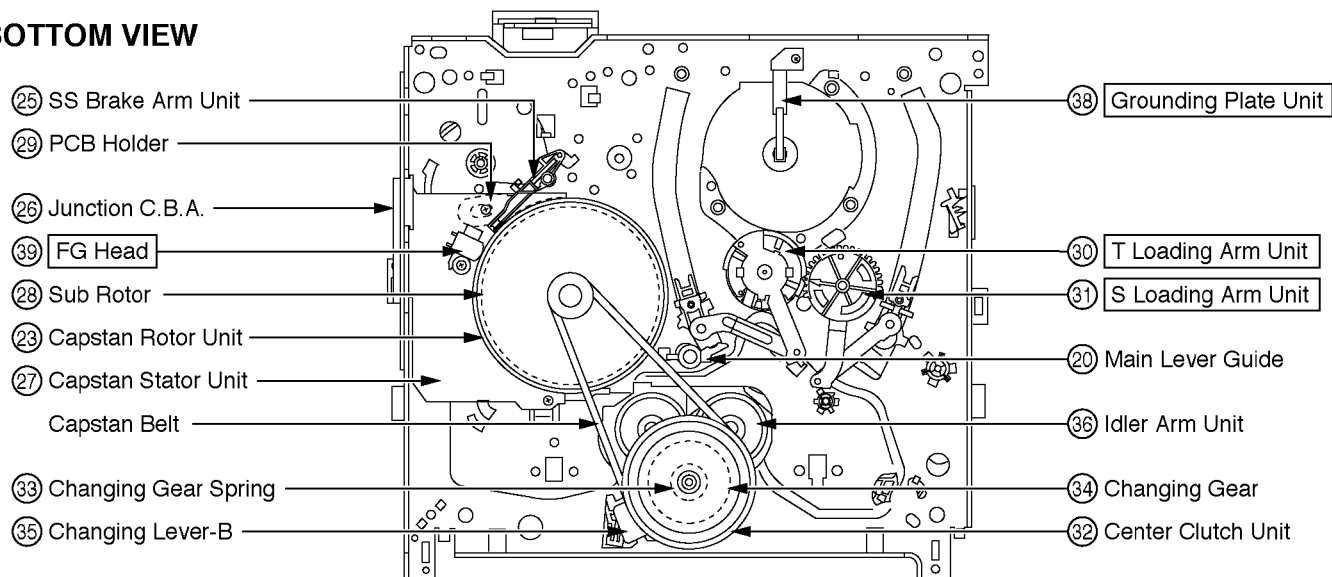


Fig. J1-1

6.2.2. EJECT Position Confirmation

Check the following alignment points to confirm that the Mechanism and Cassette Up Ass'y are in the **EJECT** Position from the top side.

(By using alignment points ❖1 & ❖2, it is possible to roughly confirm the S & T Loading Arm Units from the top side, even though they are located on the bottom side of the mechanism chassis.)

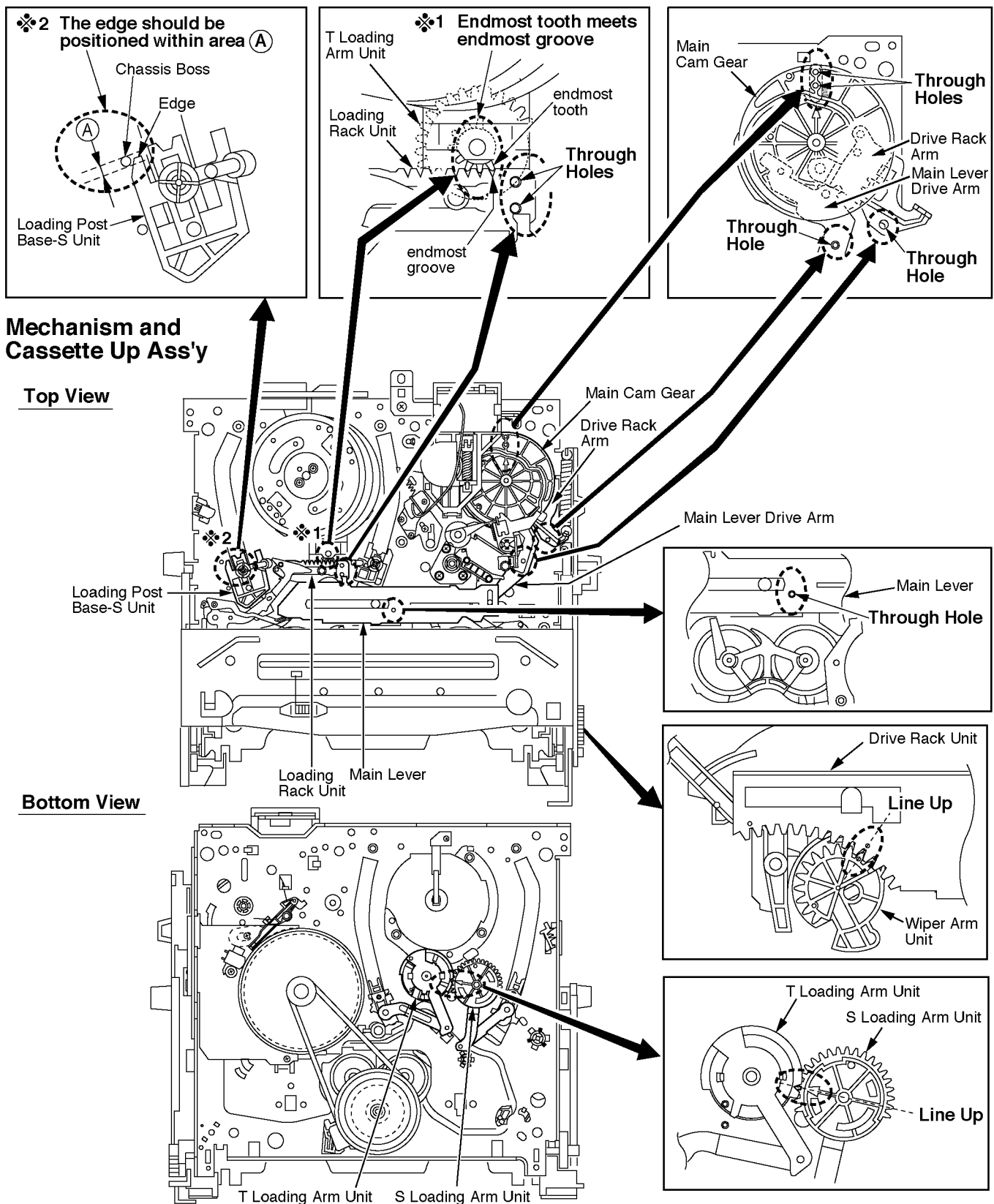


Fig. J1-2

6.2.3. Cylinder Unit

6.2.3.1. Disassembly Procedure

1. Remove 3 Screws (A) and 2 Screws with Washers (A). Then, lift the Cylinder Unit and the Head Amp C.B.A. out from the mechanism.
2. Unsolder P3502 and P3503. Then, remove the Head Amp C.B.A.

Note:

Use extreme care when removing or replacing the Cylinder Unit. Do not touch the Video Heads during servicing.

CAUTION:

When removing the Cylinder Unit, avoid touching IC2601 on the Head Amp C.B.A. because it is **HOT** during operation.

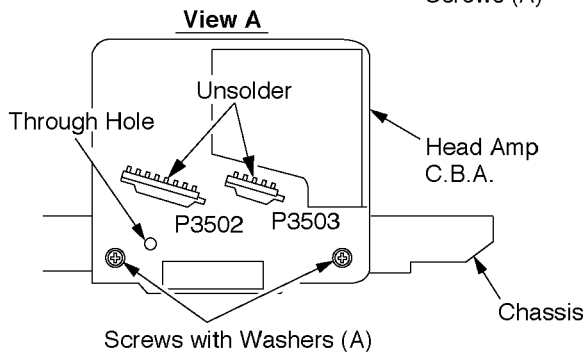
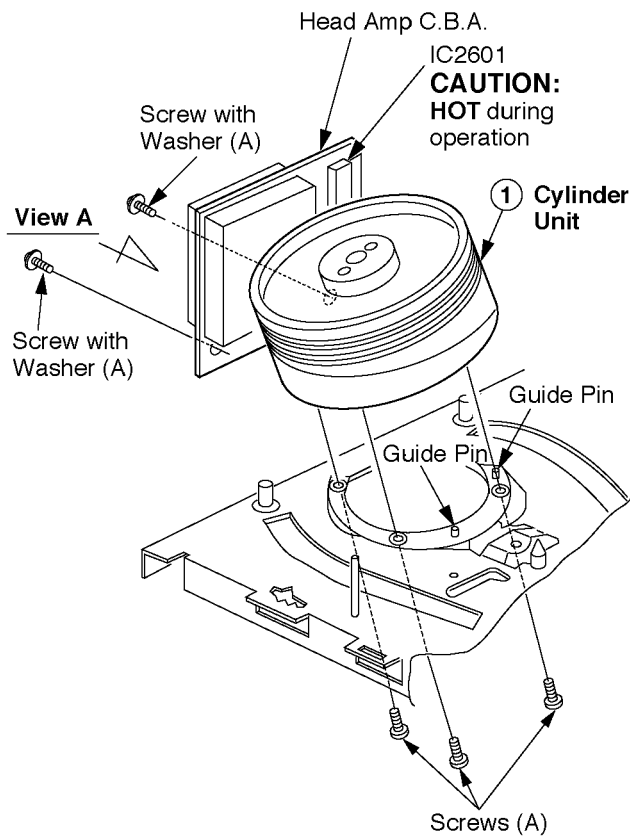


Fig. J2-1

6.2.3.2. Reassembly Notes

1. Use extreme care when removing or replacing the Cylinder Unit. Do not touch the Video Heads during servicing.
2. **Installation of Cylinder Unit**
 - a. Install the Cylinder Unit so that the 2 holes on the lower surface of the Cylinder Unit fit over the 2 Guide Pins on the Cylinder Base and loosely secure it with 3 Screws (A).
 - b. Install the Head Amp C.B.A. so that the hole on the Head Amp C.B.A. lines up with the hole on the chassis and secure it with 2 Screws with Washers (A).
 - c. Position the Cylinder Unit so that foil patterns of connectors (P3502 and P3503) and Head Amp C.B.A. are aligned, and tighten 3 Screws (A).
 - d. Solder connectors (P3502 and P3503).

3. Adjustment of Grounding Plate Unit

- a. After installing, make sure that the Grounding Plate Unit, on the bottom side of mechanism chassis, is positioned on the right side of the Cylinder shaft so that the center line of the plate is just less than 1.0 mm measured from the center of the Cylinder shaft.

If required, adjust the plate position by loosening Black Screw (A).

Never install the Grounding Plate Unit on the left side of the Cylinder shaft.

Incorrect positioning will cause cylinder buzz.

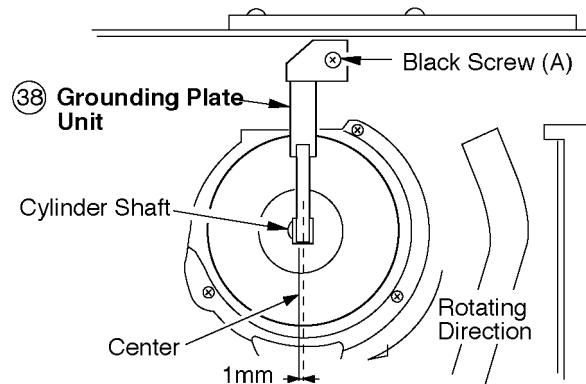


Fig. J2-2

- b. After installing, perform the "TAPE INTERCHANGEABILITY ADJUSTMENT (FINAL ADJUSTMENT)" procedures.

6.2.4. Upper Cylinder Unit

6.2.4.1. Disassembly Procedure

1. Remove 2 Screws with Washers (B).
2. Carefully lift the Upper Cylinder Unit from the shaft.

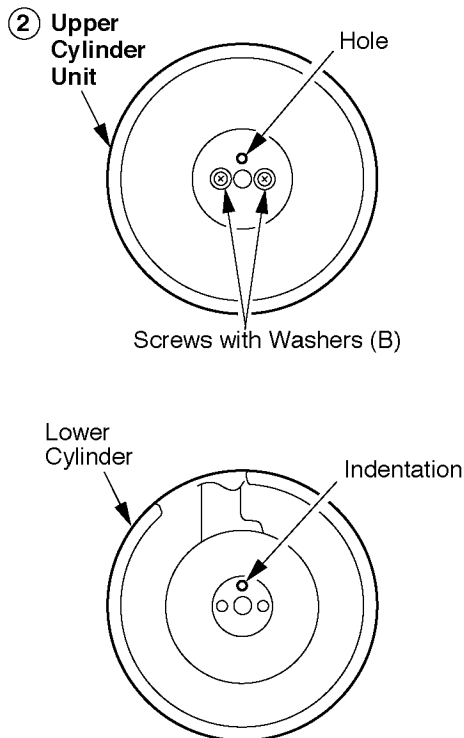


Fig. J3

Note:

Use extreme care when removing or replacing the Upper Cylinder Unit. Do not touch the Video Heads during servicing.

6.2.4.2. Reassembly Notes

1. Use extreme care when removing or replacing the Cylinder Unit. Do not touch the Video Heads during servicing.
2. **Alignment of Upper Cylinder Unit**
 - a. When installing, make sure that the hole on the Upper Cylinder is aligned with the indentation on the Lower Cylinder.
 - b. After installing, perform the "TAPE INTERCHANGEABILITY ADJUSTMENT (FINAL ADJUSTMENT)" procedures.

6.2.5. Opener Piece, Pinch Arm Unit, Motor Block Ass'y, and Audio Control Head Unit

6.2.5.1. Disassembly Procedure

1. Remove the Opener Piece by pulling it upward while releasing 2 Locking Tabs (A).
2. Pull up on the Pinch Arm Unit.
3. Release 3 Locking Tabs (B) and remove Screw with Washer (C). Then, remove the Motor Block Ass'y and Audio Control Head Unit.

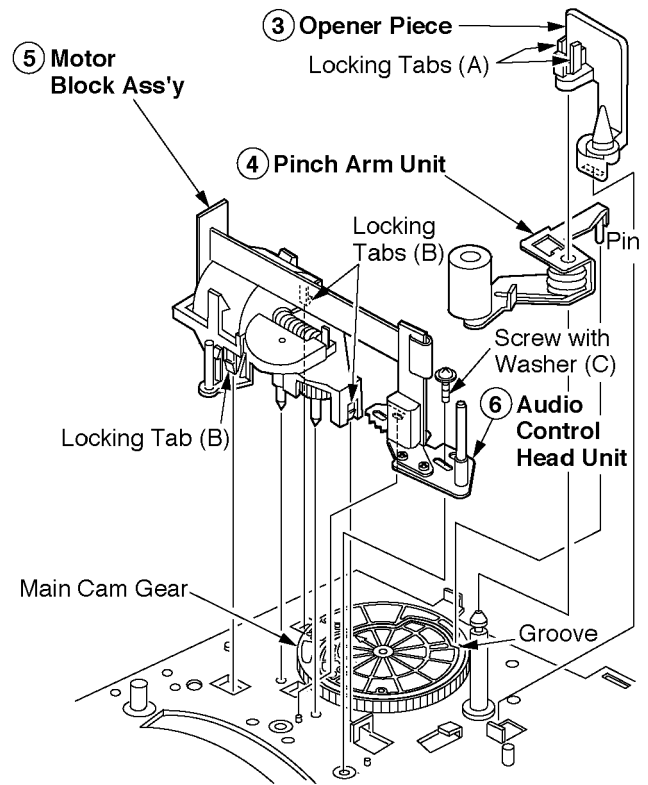


Fig. J4

6.2.5.2. Reassembly Notes

1. Installation of Audio Control Head Unit

- a. Install the Audio Control Head Unit before Motor Block Ass'y.
- b. After installing, perform the "TAPE INTERCHANGEABILITY ADJUSTMENT (FINAL ADJUSTMENT)" procedures.

2. Installation of Pinch Arm Unit

- a. Install the Pinch Arm Unit so that the Pin of Pinch Arm Unit fits in the groove of Main Cam Gear.

6.2.6. Main Cam Gear and Drive Rack Arm

6.2.6.1. Disassembly Procedure

1. Remove the Main Cam Push Nut. (Refer to Note.)
2. Pull up on the Main Cam Gear.
3. Turn the Drive Rack Arm fully counterclockwise as shown.
4. Pull up on the Drive Rack Arm.

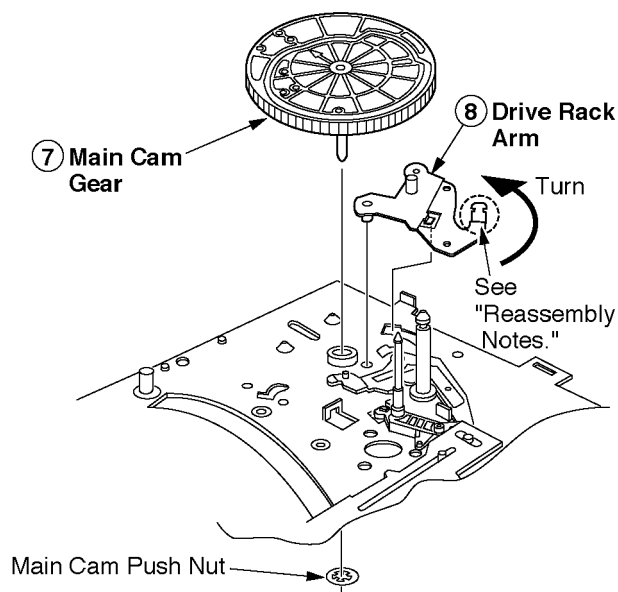


Fig. J5-1

Note:

When removing the Main Cam Push Nut, press the Main Cam Gear to make space between the Main Cam Push Nut and Bottom of Chassis. Then, remove the Main Cam Push Nut using a screwdriver etc.

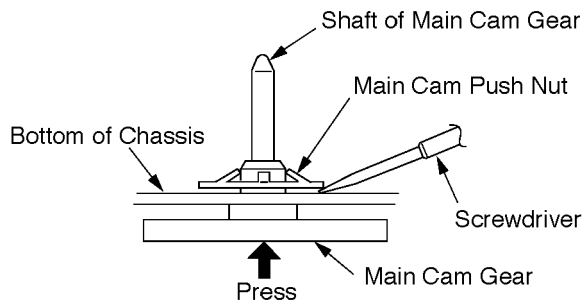


Fig. J5-2

6.2.6.2. Reassembly Notes**1. Alignment of Main Cam Gear, Drive Rack Arm, and Main Lever Drive Arm**

- Confirm that the hole (C) on the Main Lever Drive Arm is aligned with the hole on chassis (Through hole (C)) as shown.
- Install the Drive Rack Arm so that the hole (A) is aligned with the hole on chassis (Through hole (A)) as shown.
- Install the Main Cam Gear so that the 2 holes (B) marked "E" are aligned with the hole on chassis (Through hole (B)) as shown. ("E" indicates the EJECT position.)

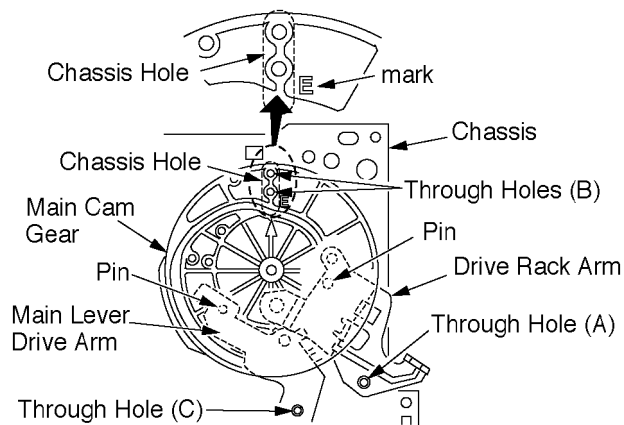


Fig. J5-3

2. Holes on Main Cam Gear

- The holes on Main Cam Gear should be aligned with the hole on chassis in each mode (Through hole) as shown.

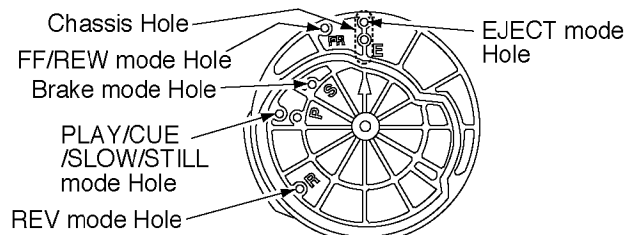


Fig. J5-4

3. Main Cam Gear Kit

- Main Cam Gear is supplied as a Main Cam Gear Kit only (Kit No. VVGS0008).

Main Cam Gear Kit consists of a Main Cam Gear and a Main Cam Push Nut.

However, Main Cam Push Nut is available separately as a replacement part.

4. Installation of Main Cam Gear and Main Cam Push Nut

- Position the chassis upside down and place a Support under the Main Cam Gear.

Install the Main Cam Push Nut with Needlenose Pliers etc. so that it is flush with the chassis.

There may be some slight scratches on the Shaft of Main Cam Gear, when removing the Main Cam Gear. In case that the Main Cam Gear can be installed securely without tottering, it is fine to use the one. If any tottering, install all new parts.

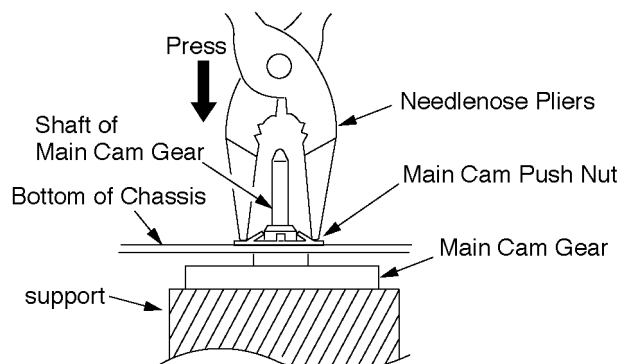


Fig. J5-5

- The Main Cam Push Nut is not reusable. Install a new one.

6. Make sure to hook Spring (A) of the Cassette Up Ass'y to the Drive Rack Arm. Refer to "Cassette Up Ass'y" in "Disassembly/Assembly Procedures of Cabinet."

6.2.7. Main Lever

6.2.7.1. Disassembly Procedure

1. Release 2 Locking Tabs (C) and Locking Tab (D). Then, remove the Main Lever.

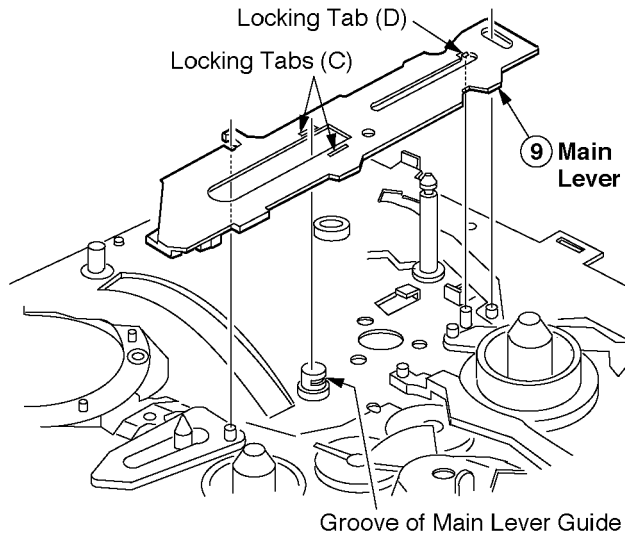


Fig. J6-1

6.2.7.2. Reassembly Notes

1. Installation/Alignment of Main Lever

- a. Make sure that the 2 holes of Loading Rack Unit are aligned with the holes on chassis (Through holes).
- b. Turn the P5 Arm Unit to the Capstan Rotor Unit Shaft side.
- c. Turn the T Brake Unit to the T Reel Table side.
- d. Position the Main Lever so that the Loading Rack Unit Pin fits in the niche of Main Lever.

Confirm that pins and bosses are in the position and that the hole of Main Lever is aligned with the hole on chassis (Through hole) as shown. Then, install the Main Lever.

- e. Push down the Locking Tabs (C) to set in the groove of Main Lever Guide.

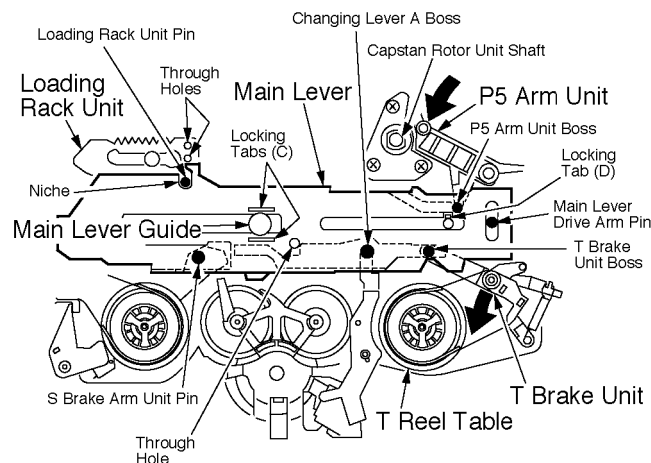


Fig. J6-2

6.2.8. P5 Arm Unit and Main Lever Drive Arm

6.2.8.1. Disassembly Procedure

1. Pull up on the P5 Arm Unit.
2. Turn the Main Lever Drive Arm fully counterclockwise as shown.
3. Pull up on the Main Lever Drive Arm.

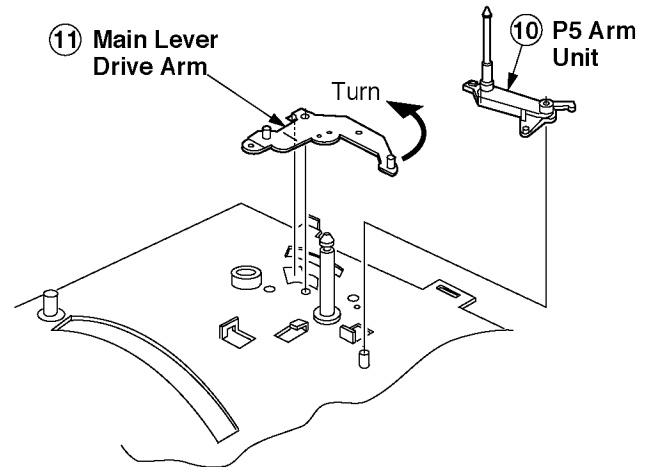


Fig. J7-1

6.2.8.2. Reassembly Notes

1. Alignment of Main Lever Drive Arm

- a. Install the Main Lever Drive Arm so that the hole (C) is aligned with the hole on the chassis Through hole (C) as shown.

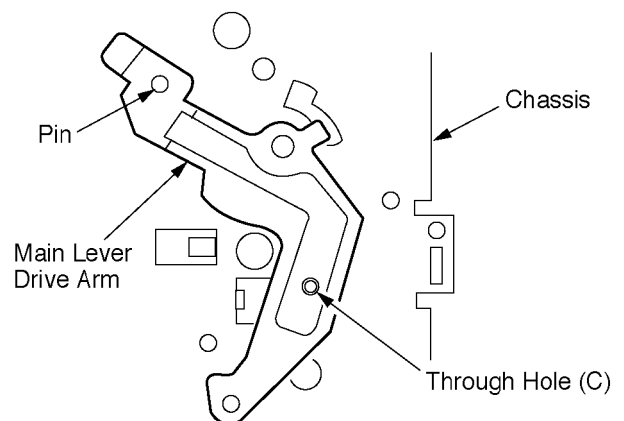


Fig. J7-2

6.2.9. T Brake Unit, Changing Lever A, and T Reel Table

6.2.9.1. Disassembly Procedure

1. Remove the T Brake Unit while releasing Locking Tab (E) located under the chassis.
2. Remove Cut Washer (A). Then, pull up on the Changing Lever A and remove.
3. Pull up on the T Reel Table.

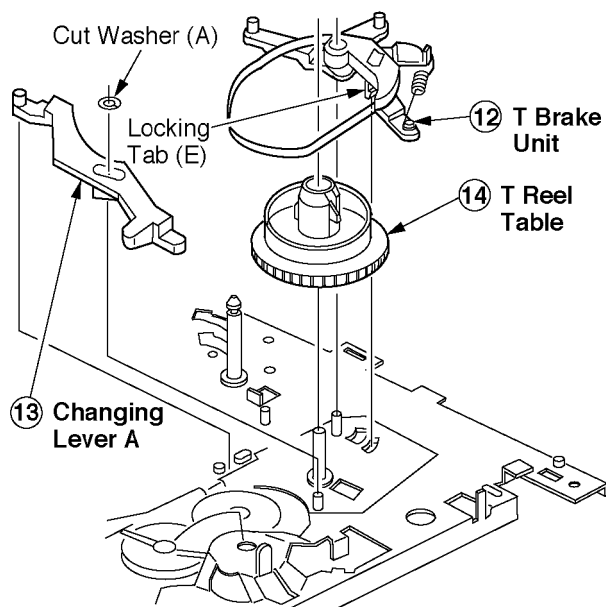


Fig. J8-1

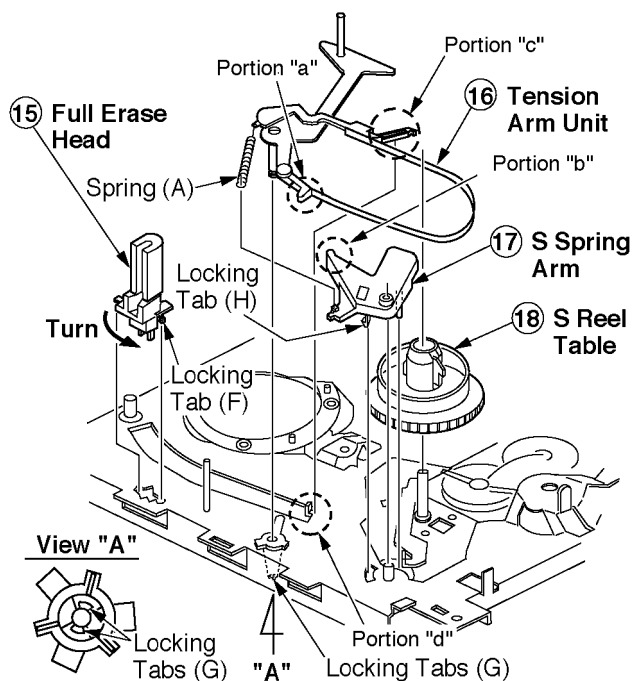


Fig. J9-1

6.2.9.2. Reassembly Notes

1. How to distinguish between S Reel Table and T Reel Table

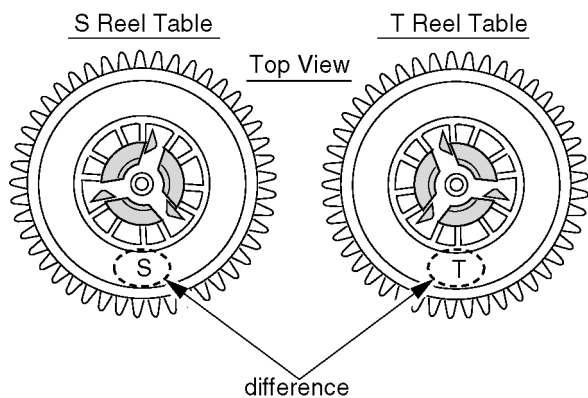


Fig. J8-2

2. Cut Washer (A) is not reusable. Install a new one.

6.2.10. Full Erase Head, Tension Arm Unit, S Spring Arm, and S Reel Table

6.2.10.1. Disassembly Procedure

1. Turn the Full Erase Head fully counterclockwise while releasing Locking Tab (F) as shown. Then remove it.
2. Unhook Spring (A).
3. Remove the Tension Arm Unit by pulling it up while releasing 2 Locking Tabs (G).
4. Remove the S Spring Arm while releasing Locking Tab (H).
5. Pull up on the S Reel Table.

6.2.10.2. Reassembly Notes

1. Confirmation/Adjustment of Tension Arm Unit

- a. When installing Tension Arm Unit and S Spring Arm, confirm "a," "b," "c," and "d" portion are in the proper position as shown.

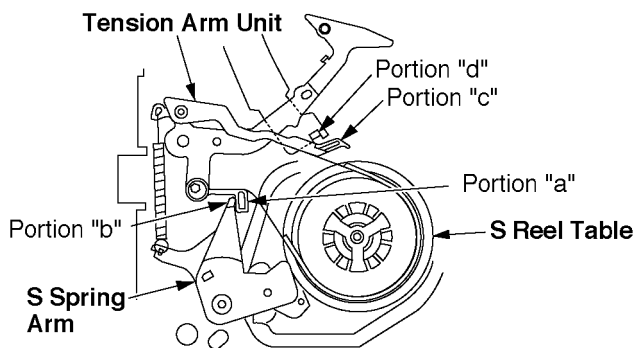


Fig. J9-2

- b. After installing, perform the "TENSION POST ADJUSTMENT" procedures.

6.2.11. S Brake Arm Unit, Main Lever Guide, Loading Post Base -S, and Loading Post Base -T Unit

6.2.11.1. Disassembly Procedure

1. Remove the S Brake Arm Unit while releasing 2 Locking Tabs (I).
2. Remove the Main Lever Guide while releasing Locking Tab (J).
3. Slide the Loading Post Base -S and T Units to the end of the guide slots to remove.

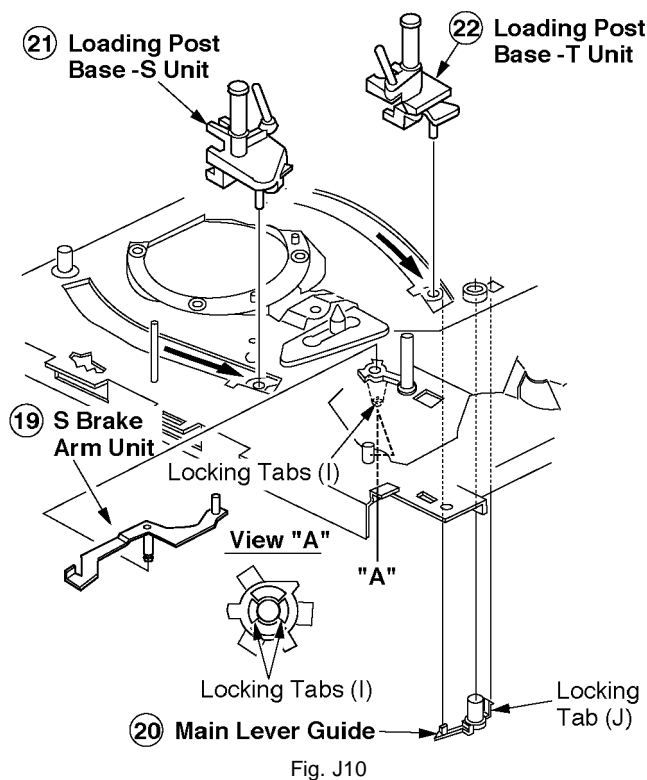


Fig. J10

6.2.11.2. Reassembly Notes

1. Adjustment of Loading Post Base -S Unit and Loading Post Base -T Unit

- After installing, perform the "P2 AND P3 POST HEIGHT ADJUSTMENT (PRELIMINARY ADJUSTMENT)" procedures and "TAPE INTERCHANGEABILITY ADJUSTMENT (FINAL ADJUSTMENT)" procedures.

6.2.12. Capstan Rotor Unit, Capstan Holder Unit, and SS Brake Arm Unit

6.2.12.1. Disassembly Procedure

- Remove the Capstan Belt.
- Cut the Stopper with a cutter to remove.
- Pull up on the Capstan Rotor Unit.
- Remove 3 Screws (B). Then remove the Capstan Holder Unit.
- Unhook Spring (B).
- Turn the SS Brake Arm Unit so that the Tab (A) lines up with the niche. Then, remove the SS Brake Arm Unit.

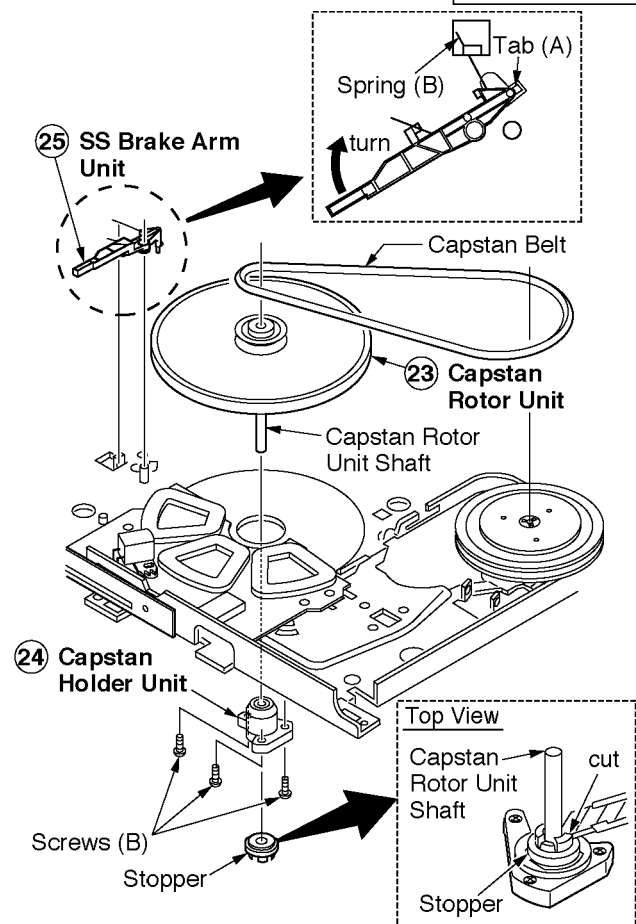


Fig. J11-1

6.2.12.2. Reassembly Notes

1. Installation of Capstan Rotor Unit

- Insert the Capstan Rotor Unit Shaft into the hole of the Capstan Holder Unit.
- Place a support under the Capstan Rotor Unit shaft. Install the Stopper. Be careful not to scratch the shaft or Capstan Holder Unit.
- Remove the support. Press the top end of the shaft down so that the Stopper is properly positioned. You should be able to move the shaft up and down slightly when properly positioned.

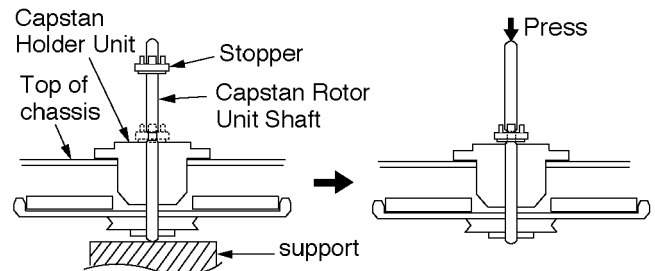


Fig. J11-2

2. Capstan Rotor Kit

- Capstan Rotor Unit, Capstan Holder Unit, and Stopper are supplied as a Capstan Rotor Kit only. (Kit No. VXPS0382K2) They are not reusable. Install all new parts.
- Because even invisible scratches on the Capstan Rotor Unit shaft and the Capstan Holder Unit, made when cutting the Stopper, could cause tape path instability.

6.2.13. Junction C.B.A., Capstan Stator Unit, Sub Rotor, and PCB Holder

6.2.13.1. Disassembly Procedure

1. Remove 2 Screws (C).
2. Unsolder P2532 on the Junction C.B.A. Then, remove the Junction C.B.A.
3. Remove Screw (D) and 2 Screws with Washers (D), (E). Then, remove Capstan Stator Unit, Sub Rotor, and PCB Holder.

CAUTION:

When removing Capstan Stator Unit, avoid touching IC2501 on the Capstan Stator Unit because it is **HOT** during operation.

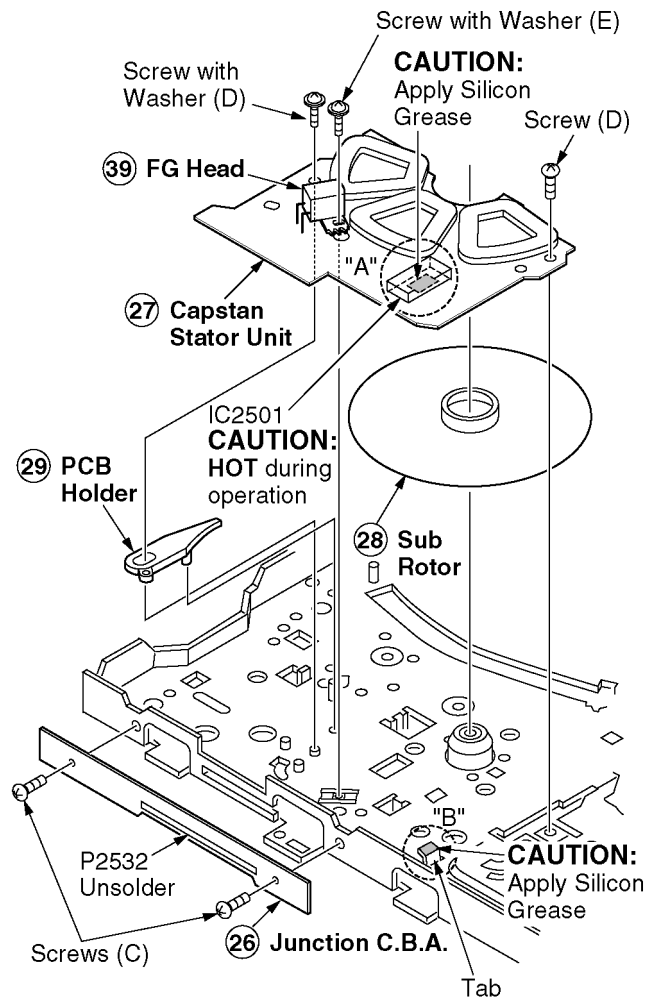


Fig. J12-1

6.2.13.2. Reassembly Notes

1. Application of Silicon Grease

CAUTION

When installing the IC2501 or Capstan Stator Unit, be sure to apply Silicon Grease (VFK1301) as shown. Be careful not to touch other parts with greased portion to prevent grease depletion.

Silicon Grease Application

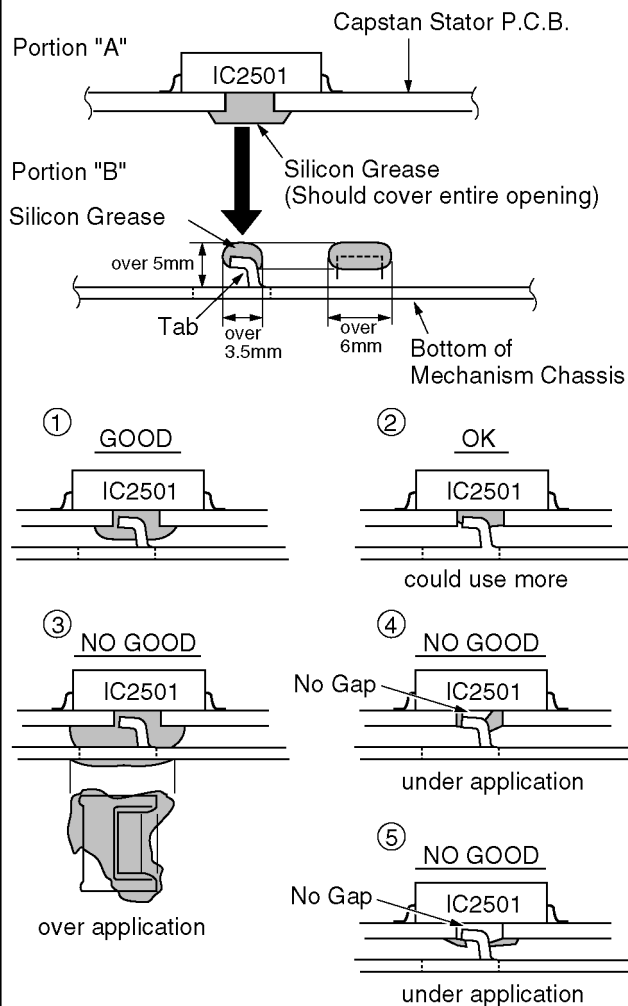


Fig. J12-2

2. Capstan Stator Kit

- a. Capstan Stator Unit, Capstan Rotor Unit, Capstan Holder Unit, and Stopper are supplied as a Capstan Stator Kit only (Kit No. VEMS0316K2).

However, IC2501 (AN3845SC) is available separately as a replacement part.

Capstan Rotor Unit, Capstan Holder Unit, and Stopper are not reusable. Install all new parts.

Because even invisible scratches on the Capstan Rotor Unit shaft and the Capstan Holder Unit, made when cutting the Stopper, could cause tape path instability.

3. Adjustment of FG Head

- a. After installing, perform the "FG HEAD GAP ADJUSTMENT" procedures.

6.2.14. T Loading Arm Unit and S Loading Arm Unit

6.2.14.1. Disassembly Procedure

1. Remove the T Loading Arm Unit by pulling it up while releasing Locking Tab (K).
2. Pull up on the S Loading Arm Unit.

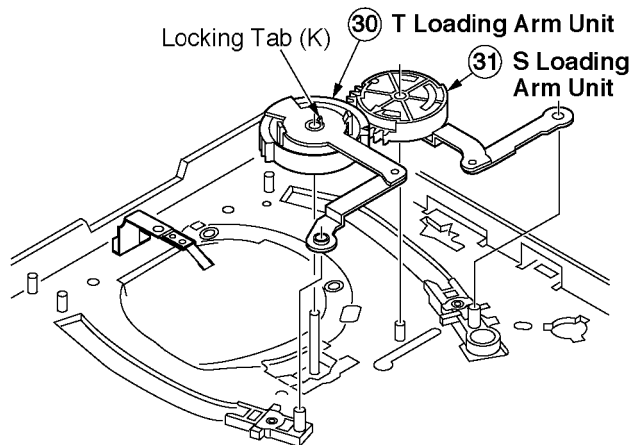


Fig. J13-1

6.2.14.2. Reassembly Notes

1. Alignment of Loading Rack Unit, T Loading Arm Unit, and S Loading Arm Unit

- a. Slide the Loading Rack Unit so that the holes on it and the holes on the chassis line up properly.
- b. Install the S Loading Arm Unit onto the Chassis.
- c. Install the T Loading Arm Unit so that the triangle-shaped indent is aligned with the arrow on the S Loading Arm Unit as shown. Confirm that each hole on the T Loading Arm Unit, Chassis, and Loading Rack Unit are through holes.

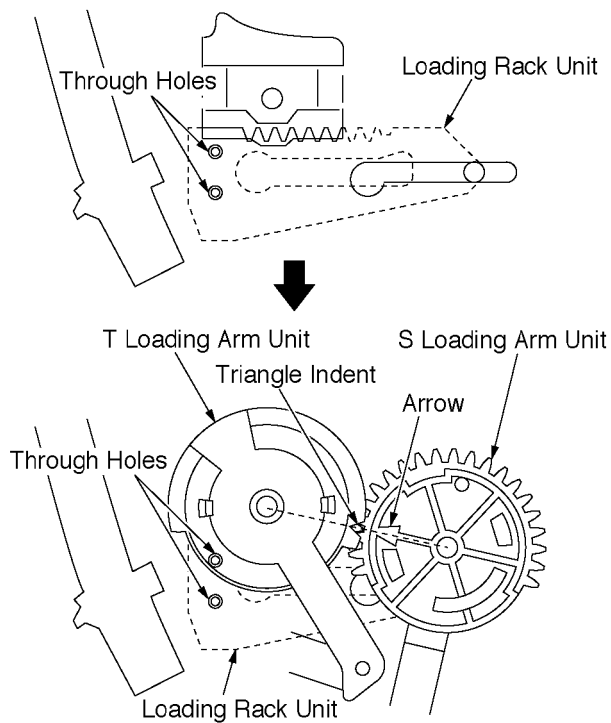


Fig. J13-2

6.2.15. Center Clutch Unit, Changing Gear Spring, Changing Gear, Changing Lever-B, and Idler Arm Unit

6.2.15.1. Disassembly Procedure

1. Remove Cut Washer (B). Then remove the Center Clutch Unit, Changing Gear Spring, and Changing Gear.
2. Remove Changing Lever -B so that the 2 Mounting Holes clear Mounting Pins.
3. Pull up on the Idler Arm Unit.

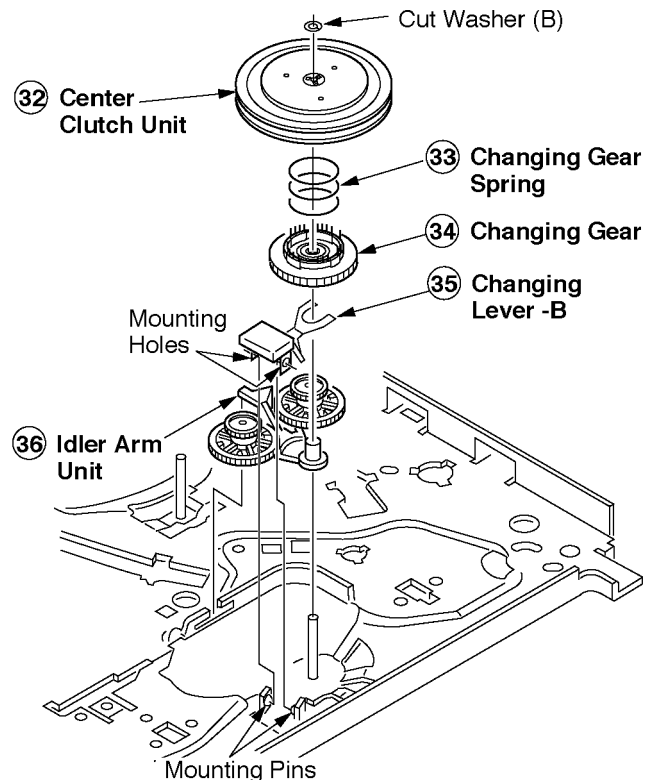


Fig. J14-1

6.2.15.2. Reassembly Notes

1. Installation of Center Clutch Unit

- a. Fit the Center Clutch Unit into the Changing Gear as shown.

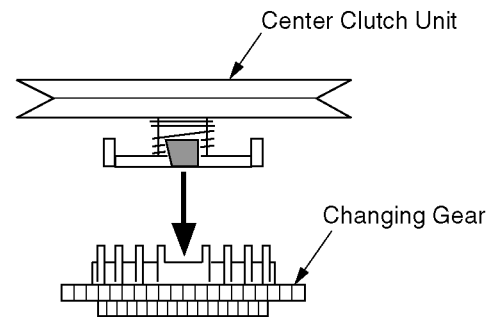


Fig. J14-2

2. Cut Washer (B) is not reusable. Install a new one.

6.2.16. Loading Rack Unit

6.2.16.1. Disassembly Procedure

1. Slide the Loading Rack Unit as indicated by the arrow.
Then, pull up on the Loading Rack Unit.

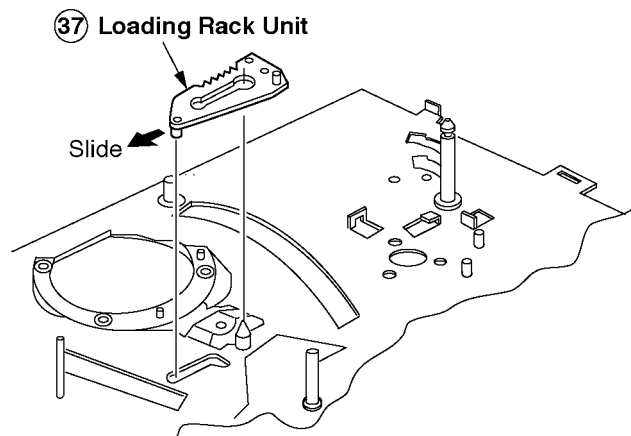


Fig. J15

6.2.16.2. Reassembly Notes

1. Alignment of Loading Rack Unit

- a. When installing Loading Rack Unit, refer to Reassembly Notes of "T Loading Arm Unit and S Loading Arm Unit."

6.3. CASSETTE UP COMPARTMENT SECTION

6.3.1. Top Plate, Wiper Arm Unit, and Holder Unit

6.3.1.1. Disassembly Procedure

1. Remove Top Plate by releasing 2 Locking Tabs (A) on the left side and 2 Locking Tabs (B) on the right side of the Top Plate.
2. Remove Wiper Arm Unit by releasing 2 Locking Tabs (C).
Then, remove the Holder Unit.

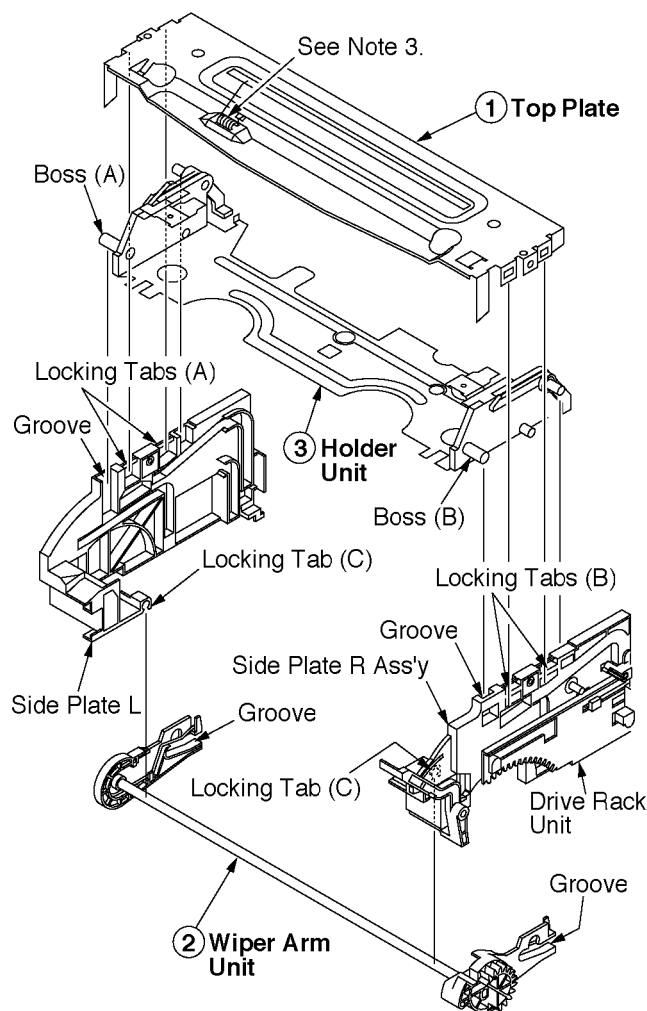


Fig. K1-1

6.3.1.2. Reassembly Notes

1. Alignment of Wiper Arm Unit and Drive Rack Unit

- a. Slide the Drive Rack Unit to the far right as indicated by the arrow.
- b. Install the Wiper Arm Unit so that the hole on the Wiper Arm Unit is aligned with the hole on the Drive Rack Unit.

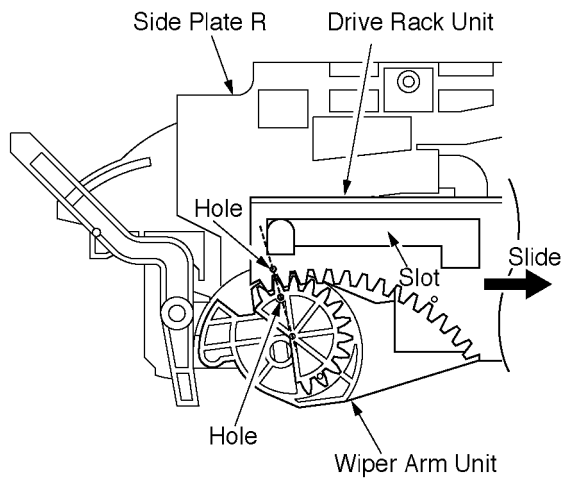


Fig. K1-2

2. Installation of Holder Unit

- Turn the Wiper Arm Unit so that the grooves on each end are aligned with the each groove on Side Plate L and R.
- Insert Holder Unit boss (A) and (B) into the grooves (See Fig. K1-1 on previous page).
- Finally, in the EJECT Position, confirm that the protrudence on the Wiper Arm Unit is aligned with the indentation on the Drive Rack Unit.

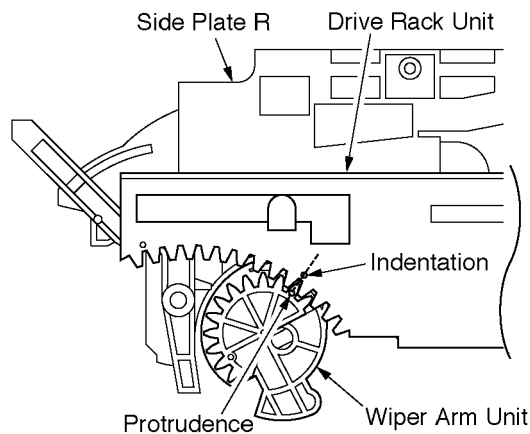


Fig. K1-3

- As an ESD countermeasure, make sure the spring is in contact with Top Cover.

6.3.2. Sensor Cover, Opener Lever, and Drive Rack Unit

6.3.2.1. Disassembly Procedure

- Remove the Sensor Cover by releasing Locking Tab (D).
- Remove the Opener Lever by releasing 2 Locking Tabs (E). Then remove the Drive Rack Unit.

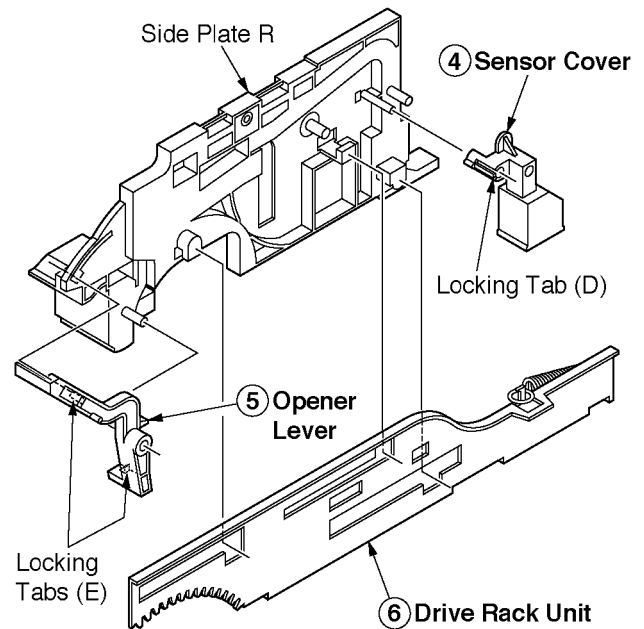
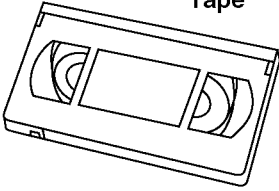
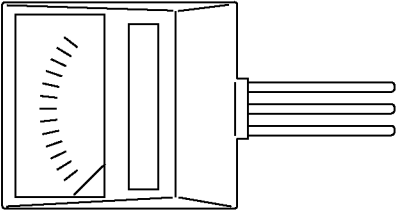
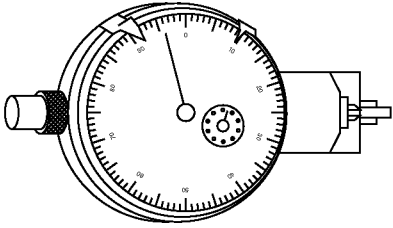
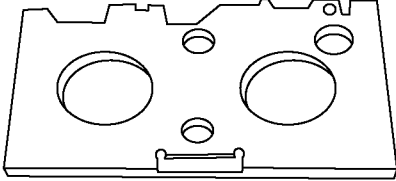

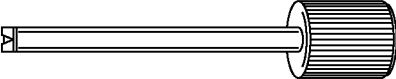
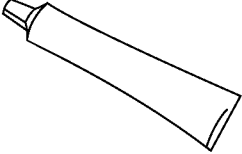
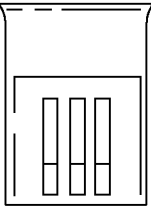
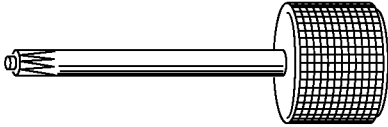
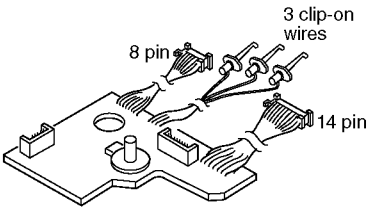
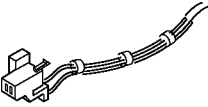
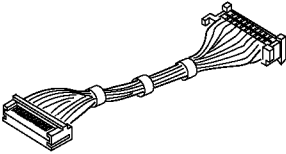
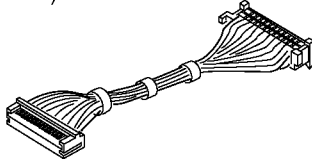
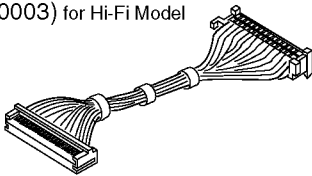


Fig. K2

7 ADJUSTMENT PROCEDURES

7.1. SERVICE FIXTURES AND TOOLS

VFMS0003H6 VHS Alignment Tape  <div> <div>Video</div> <div>Audio</div> <div>Color Bar & Monoscope</div> <div>6kHz(MONO)</div> </div>	Back Tension Meter (Made in USA., Purchase Locally) 	VFKS0009 Reel Table Height Fixture 
VFKS0010 Post Adjustment Plate 	VFKS0081 Grease 	VFK0329 Post Adjustment Driver 
VFK1301 Silicon Grease 	VFK27 Head Cleaning Stick 	VFK0330 H-Position Adjustment Driver 
VUZS0002 Mode Select SW. Ass'y (VUVS0001) 	Extension Cable -1 (VUVS0002)  Extension Cable -2 (VUVS0005) for 2 Head Model 	Extension Cable Kit Extension Cable -2 (VUVS0004) for 4 Head Model  Extension Cable -2 (VUVS0003) for Hi-Fi Model 

7.2. MECHANICAL ADJUSTMENT

7.2.1. CLEANING PROCEDURE FOR THE UPPER CYLINDER UNIT

1. While slowly turning the Upper Cylinder Unit counterclockwise by hand, gently rub the Video Heads with a Head Cleaning Stick (VFK27) moistened with Ethanol.

When using a Cleaning Cassette, make sure to use "DRY" type only and be aware that excessive use can shorten head life.

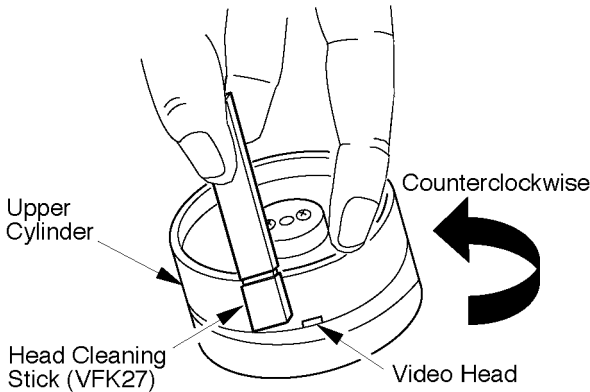


Fig. M1

Note:

- a. Do not rub vertically or apply excess pressure to the Video Heads.
Do not turn the Upper Cylinder Unit clockwise while cleaning.
- b. After cleaning, use a Dry Head Cleaning Stick (VFK27) to remove any Ethanol remaining on the cylinder tape path. Otherwise, tape damage will occur.

7.2.2. ADJUSTMENT PROCEDURES

7.2.2.1. TENSION POST ADJUSTMENT

- Purpose:** To maintain a constant tape tension so that the tape runs with stability by performing preliminary adjustment.
- Symptom of Misadjustment:**
- 1) If the adjusted value is below the specification, the tape tension is not sufficient, thus causing a tape slack.
 - 2) If the adjusted value is above the specification, the tape tension is too high, thus causing tape damage.

Equipment Required: 2 mm Hex. Wrench (Purchase Locally)

1. Remove the Cassette Up Ass'y.
2. Plug the AC plug into an AC outlet.
3. Place the unit in the Service Mode. Refer to "SERVICE MODE" in the "Service Notes" section of this manual.
The power comes on and the unit goes into the PLAY Mode.
4. Using a (2 mm) Hex. Wrench, adjust the nut on the Tension Adjust Piece (counterclockwise only) so that there is a space of 1 mm between the left edge of the P1 Post and the right edge of the Tension Post. Make sure that the center of the Hex. Wrench hole is within Area "A".
5. After adjustment, remove the Hex. Wrench.
6. Press the STOP/EJECT button to place the unit in the EJECT Mode.
7. Release the unit from the Service Mode. Refer to "SERVICE MODE" in the "Service Notes" section of this manual.

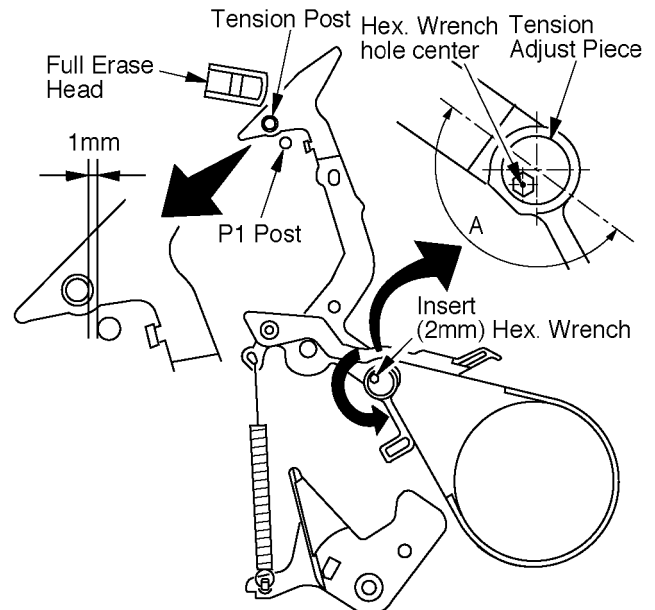


Fig. M2

7.2.2.2. BACK TENSION CONFIRMATION

- Purpose:** To fine adjust the Back Tension so that the tape runs smoothly with a constant tension.
- Symptom of Misadjustment:**
- 1) If the tape tension is less than the specified value, the tape cannot come into proper contact with the Video Heads, resulting in poor picture playback.
 - 2) If the tape tension is too high, the tape will soon be damaged.

Measurement Procedure

- Equipment Required:** Back Tension Meter (Made in U.S.A., Purchase Locally)
VHS Cassette Tape (120-Minute Tape)
- Specification** 25 +/- 2.5g

1. Play back a T120 cassette tape from the beginning for approx. 10 to 20 seconds to stabilize tape movement.
 2. Insert a Tension Meter into tape path and measure the back tension.
 3. If the reading is out of specification, make sure that there is no dust or foreign material between the Tension Band of Tension Arm Unit and the Reel Table.
- If cleaning does not correct the tension measurement, replace the Tension Spring and the Tension Arm Unit.

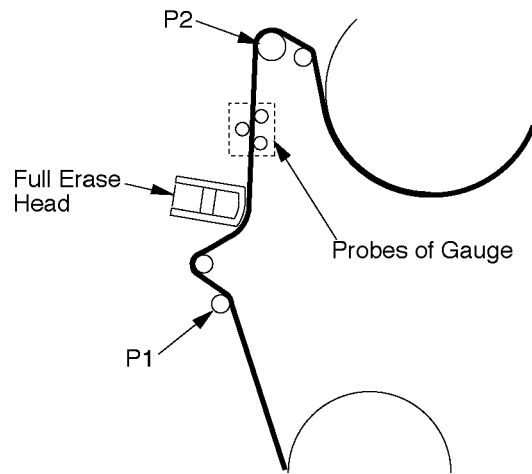


Fig. M3-1

Note:

- 1) Be sure that the three probes of the meter are all in solid contact with the tape, but not touching any other parts of the mechanism.
- 2) It is recommended that measurements be repeated at least three (3) times because the tension meter is very sensitive to external vibrations.

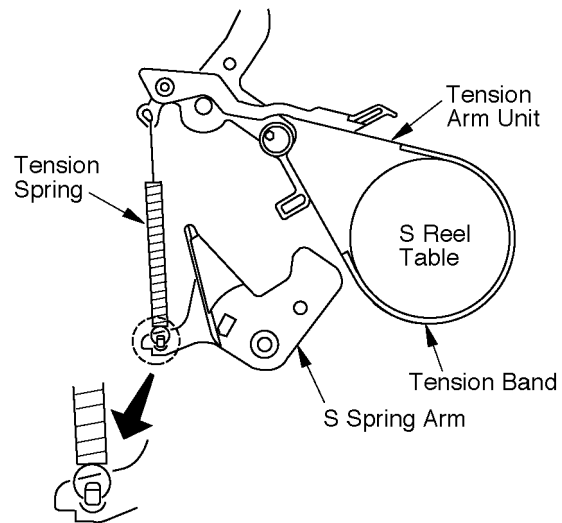


Fig. M3-2

7.2.2.3. FG HEAD GAP ADJUSTMENT

- Purpose:** To properly pick up the FG Signal.
- Symptom of Misadjustment:** If the FG Signal is not properly picked up, Servo Operation cannot be achieved.
- Equipment Required:** Oscilloscope
- Specification** 0.13 +/- 0.02mm

1. Remove the VCR Chassis Unit and then place it upside down.
2. Remove the Main C.B.A.
3. Slightly loosen Black Screw (A). Then set the Screwdriver (#1 or #2 Phillips Driver) into the Hole (A). Turn the screwdriver counterclockwise until the FG Head touches the rotor. Then turn it slightly clockwise to the clearance as specified.
4. Tighten Black Screw (A).
5. Reinstall the Main C.B.A.

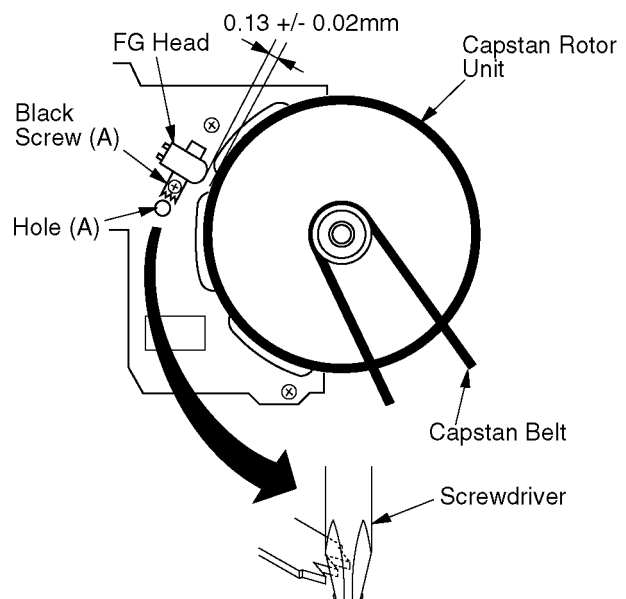


Fig. M4

Note:

Do not touch the outside circumference of the rotor surface with any tool and keep magnetic material away from the rotor magnet (especially metal particles).

Confirmation of Signal Level

1. Supply a Video Signal to the Video Input Jack.
2. Insert a cassette tape and place the unit in SLP recording mode.
3. Connect the oscilloscope to Pin 7 of P2502 on the Capstan Stator Unit.

Confirm that the signal level is greater than 15mVp-p.

7.2.2.4. P2 AND P3 POST HEIGHT ADJUSTMENT (PRELIMINARY ADJUSTMENT)

Purpose:	To properly align the position of the tape with the Cylinder Lead so that the tape runs with stability.
Symptom of Misadjustment:	Since the Envelope Waveform Signal cannot be tracked properly, the Playback picture will be poor. Since the tape does not run smoothly, the tape will eventually be damaged. Tape interchangeability is poor.
Equipment Required:	Post Adjustment Plate (VFKS0010) Reel Table Height Fixture (VFKS0009) Post Adjustment Driver (VFK0329)

1. Remove the Cassette Up Ass'y.
2. Position the Post Adjustment Plate over the reels.
3. Place the fixture on the Post Adjustment Plate and zero the fixture (DO NOT use the cut-out portion of the post adjustment plate.)

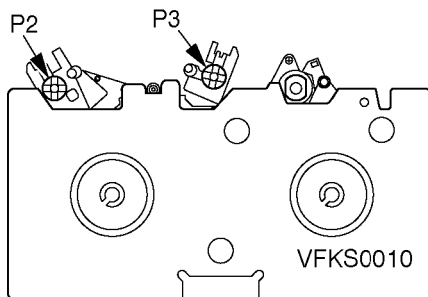


Fig. M5-1

4. Lower each post below the top edge of the Post Adjustment Plate. Then, raise each post until it contacts the foot of the Reel Table Height Fixture. For proper adjustment, the foot of that should be positioned as shown.

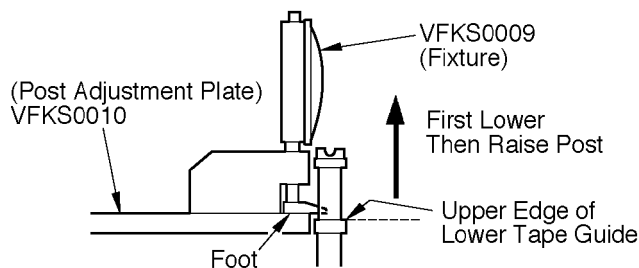


Fig. M5-2

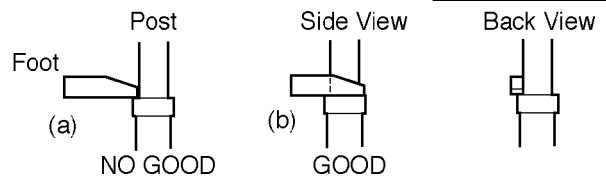


Fig. M5-3

CAUTION:

1. Overtightening P2 and P3 posts may cause the threads to strip.
2. Upon completion of this procedure, perform the "ENVELOPE OUTPUT ADJUSTMENT" procedures.

7.2.2.5. TAPE INTERCHANGEABILITY ADJUSTMENT (FINAL ADJUSTMENT)

Note:

To perform these adjustment/confirmation procedures, set the tracking to the neutral position.

Equipment Required:	Dual Trace Oscilloscope VHS Alignment Tape (VFMS0003H6) Post Adjustment Driver (VFK0329) H-Position Adjustment Driver (VFK0330)
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7.2.2.5.1. ENVELOPE OUTPUT ADJUSTMENT

Purpose:	To achieve a satisfactory picture and secure precise tracking.
Symptom of Misadjustment:	If the envelope is output poorly, much noise will appear in the picture. Then the tracking will lose precision and the playback picture will be distorted by any slight variation of the tracking control circuit.
Equipment Required:	Post Adjustment Driver (VFK0329)

1. Connect the oscilloscope to TP3002 on the Main C.B.A. Use TP6205 as a trigger.
2. Place a jumper between TP6003 and +5V(TP6009) on the Main C.B.A. to defeat Auto Tracking.
3. Eject the tape and insert it again to access the Neutral Tracking position.
4. Play back the alignment tape and confirm that the RF envelope appears.
5. With Post Adjust Driver, adjust P2 and P3 post height so that the envelope waveform (V1/V-max. is 0.7 or more.) becomes as flat as possible (No envelope drop). If the envelope drop appears on the left-half of the waveform, adjust P2 post height. If the envelope drop appears on the right-half of the waveform, adjust P3 post height.

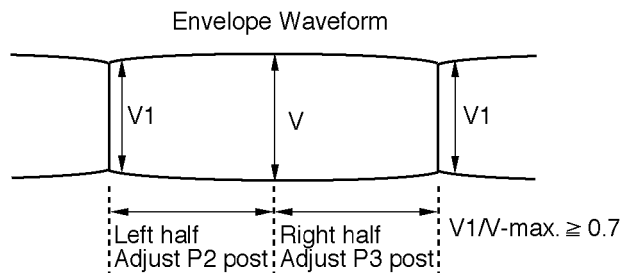


Fig. M6-1

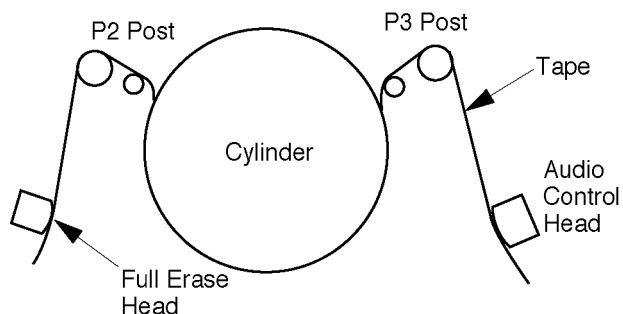


Fig. M6-2

Note:

To confirm adjustment, press the Tracking Control Up or Down button on remote control. Make sure that the envelope waveform remains flat. If not, readjust P2 and/or P3 post heights.

6. After adjustment, confirm that the tape travels without curling at P2 and P3 posts.
7. Remove the jumper after completing the adjustment procedure.

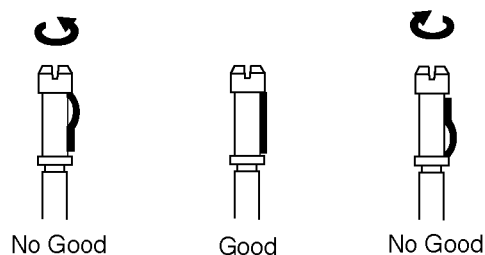


Fig. M6-3

Note:

Overtightening P2 and P3 posts may cause the threads to strip.

7.2.2.5.2. AUDIO CONTROL HEAD TILT ADJUSTMENT

Purpose: To confirm that the tape runs smoothly. In particular, confirm that the tape properly picks up the Audio Signal at the upper part of the head and the Control Signal at the lower part of the head.

Symptom of Misadjustment: If the tilt of the Audio Control Head is poorly adjusted, the tape will eventually be damaged. An intermittent Blue screen may be seen in Playback.

1. Play back a T120 cassette tape and check that the tape travels smoothly between the upper and lower guides of the P4 post.
2. If necessary, adjust Black Screw (B) clockwise until the tape begins to curl at the lower edge of the P4 post. Then adjust the screw counterclockwise until the curling is eliminated.

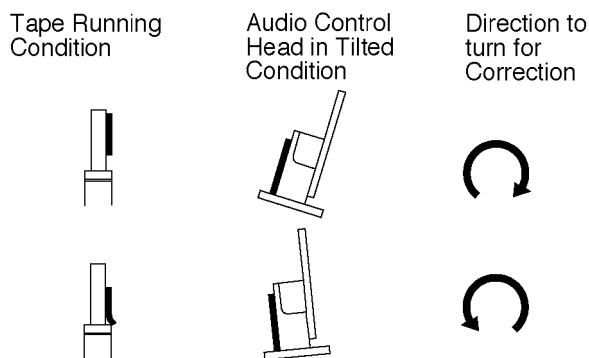


Fig. M7

7.2.2.5.3. AUDIO CONTROL HEAD HEIGHT ADJUSTMENT

The height of the Audio Control Head replacement part is preset at the factory.

Purpose: To be sure the tape runs properly along the Control Head.

Symptom of Misadjustment: If the control signal is not properly picked up, Servo Operation cannot be achieved. A Blue screen will be seen in Playback.

This confirmation is required when the Audio Control Head is replaced.

1. Play back a T120 cassette tape and check that the lower edge of the tape runs approximately 0.25 mm above the lower edge of the Audio Control Head.
2. If necessary, adjust Black Screws (A) and (B) clockwise to lower the tape or counterclockwise to raise.

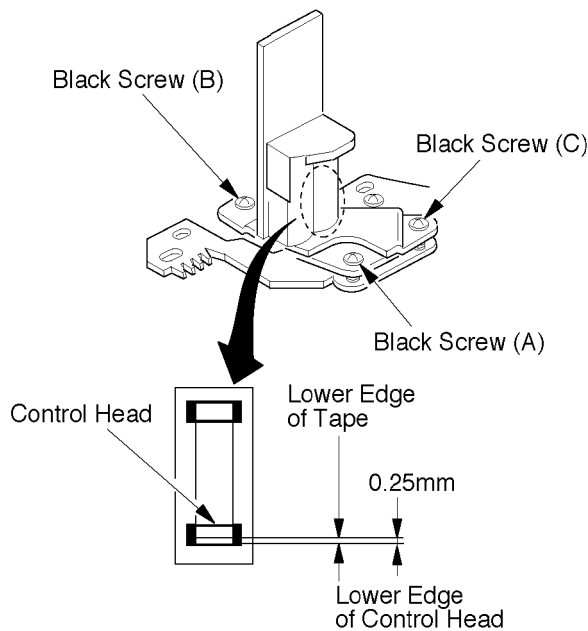


Fig. M8

7.2.2.5.4. AUDIO CONTROL HEAD AZIMUTH ADJUSTMENT

Purpose: To adjust the position and height of the Audio Control Head so that it meets the tape tracks properly.

Symptom of Misadjustment: If the position of the Audio Control Head is not properly adjusted, the Audio S/N Ratio is poor.

1. Connect the oscilloscope to TP4002 on the Main C.B.A.
2. Play back the 6kHz Monaural Audio portion of the alignment tape.
3. Adjust Black Screw (C) on the Audio Control Head base so that the output level is at maximum.

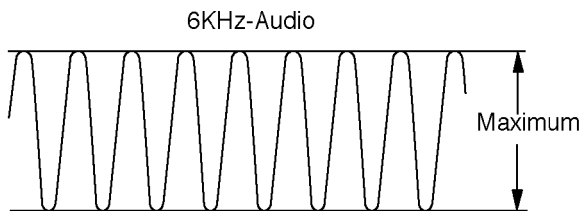


Fig. M9

4. Confirm the height of the Audio Control Head is proper. If not, readjust Black Screws (A) and (B).

7.2.2.5.5. AUDIO CONTROL HEAD HORIZONTAL POSITION ADJUSTMENT

Purpose: To adjust the Horizontal Position of the Audio Control Head.

Symptom of Misadjustment: If the Horizontal Position of the Audio Control Head is not properly adjusted, a maximum envelope cannot be obtained at the Neutral Position of the Tracking Control Circuit.

1. Connect the oscilloscope to TP3002 on the Main C.B.A. Use TP6205 as a trigger.
2. Place a jumper between TP6003 and +5V(TP6009) on the Main C.B.A. to defeat Auto Tracking.
3. Eject the tape and insert it again to access the Neutral Tracking position.
4. Play back the alignment tape and confirm that the RF envelope appears.
5. If adjustment is required, loosen the Black Screw (D) and tighten it lightly. Set the H-Position Adjustment Driver into the Hole (A). Then slowly turn the fixture either clockwise or counterclockwise so that the envelope is at maximum.
6. Before finding the center of the maximum period of the envelope, rotate the fixture back and forth slightly to confirm the limits on either side of the maximum period.
7. Push the Tracking Control Up Button (on the Remote Control) several times (count the number of times pushed) until the maximum envelope is reduced to 1/2.
8. Reset the tracking to the neutral position by ejecting the tape and reinserting it. Push the Tracking Control Down Button (on the Remote Control) several times (count the number of times pushed) until the maximum envelope is reduced to 1/2.
9. If the number of pushing is not the same, then loosen the Black Screw (D) and set the H-Position Adjustment Driver into the Hole (A) to find the center point. Then repeat the above procedure to determine the center point.
10. Tighten Black Screw (D).

(The Black Screw (D) should be in the approximate center of the hole.)

11. Remove the jumper between TP6003 and +5V(TP6009).

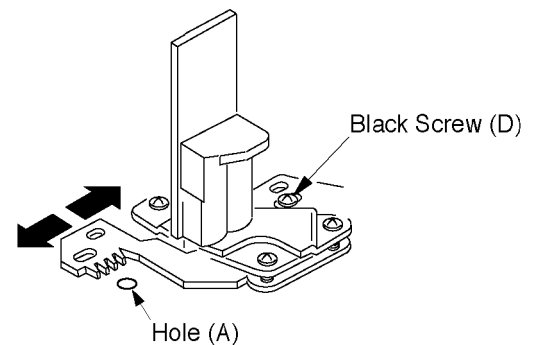


Fig. M10

Note:

Old type of H-Position Adjustment Driver (VFK0136) can be used for this adjustment.

7.3. ELECTRICAL ADJUSTMENT

7.3.1. TEST EQUIPMENT

To do all of these electrical adjustments, the following equipment is required.

1. Dual-Trace Oscilloscope
Voltage Range : 0.001 to 50V/Div.
Frequency Range: DC to 50MHz
Probes: 10:1, 1:1
2. NTSC Video Pattern Generator
3. DVM(Digital Volt Meter)
4. Plastic Tip Driver and Non-Metal Driver
5. Isolation Transformer (Variable)
6. VHS Alignment Tape (VFMS0003H6)
7. Degaussing Coil
8. White Pattern Generator

7.3.2. HOW TO READ THE ADJUSTMENT PROCEDURES

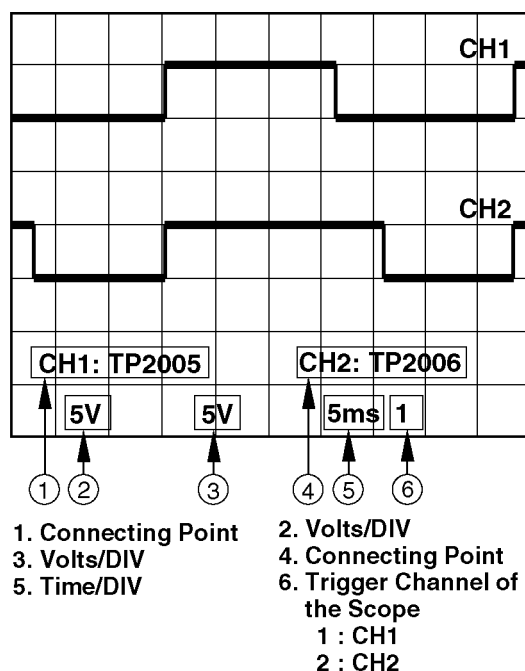


Fig. E1

7.3.3. TV OUTPUT VOLTAGE CONTROL ADJUSTMENT

Note:

Perform TV Output voltage control adjustment before TV PWM duty control adjustment.

Purpose: To set the proper DC output voltage for TV circuit.

Symptom of Misadjustment: The picture size and picture brightness will be abnormal.

Test Point: **TP503 (DC+115V) (TV Main C.B.A.)**
TP504 (GND) (TV Main C.B.A.)

Adjustment: **R1112 (Sub Power C.B.A.)**

Specification: **+115V +/- 0.3VDC**

Mode: STOP

Equipment: DVM (Digital Volt Meter)

1. Apply AC120V to AC cord of the unit and press POWER button on the Main C.B.A.
2. Connect the DVM to TP503(+) and TP504(-) on the TV Main C.B.A.
3. Adjust R1112 (DC+115V) on the Sub Power C.B.A. so that the voltage is +115V +/- 0.3VDC.

7.3.4. VCR OUTPUT VOLTAGE CONTROL ADJUSTMENT

Note:

Perform VCR output voltage control adjustment before VCR PWM duty control adjustment.

Purpose: To set the proper DC output voltage for VCR circuit.

Symptom of Misadjustment: The unit is powered off 5 seconds from the moment it is powered on.

Test Point: **TP1201 (DC+14V) (Main C.B.A.)**

Adjustment: **R1115 (Sub Power C.B.A.)**

Specification: **+14V +/- 0.2VDC**

Mode: STOP

Equipment: DVM (Digital Volt Meter)

1. Apply AC120V to AC cord of the unit and press POWER button on the Main C.B.A.
2. Connect the DVM to TP1201(+) and GND(-) on the Main C.B.A.
3. Adjust R1115 (DC+14V) on the Sub Power C.B.A. so that the voltage is +14V +/- 0.2VDC.

7.3.5. TV PWM (PULSE WIDTH MODULATION) DUTY CONTROL ADJUSTMENT

Purpose: To set the optimum PWM duty control for TV output voltage circuit.

Symptom of Misadjustment: The picture size will be abnormal or TV circuit will be powered off.

Test Point: TP1103, TP1104 (Sub Power C.B.A.)

Adjustment: R1128 (Sub Power C.B.A.)

Specification: Refer to descriptions below.

Mode: STOP

Equipment: Oscilloscope

1. Connect TP1103 to TP1104 through a resistor (100 ohm).
Then, connect oscilloscope to TP1103(+) and TP1104(-) on the Sub Power C.B.A.
2. Apply AC120V to AC cord of the unit and press POWER button on the Main C.B.A.
3. Set the oscilloscope so that the "A" becomes 10 scales on the oscilloscope as shown in Fig. E2.
4. Turn R1128 on the Sub Power C.B.A. fully counterclockwise.
5. While slowly turning R1128 on the Sub Power C.B.A., adjust to the first point that "B" becomes 8.1 scale on the oscilloscope as shown in Fig. E2.
6. After this adjustment is complete, power off the unit first.
And then, disconnect a resistor (100 ohm).

Caution:

Do not connect or disconnect a resistor (100 ohm) while the unit is powered on. If not, the unit may be damaged.

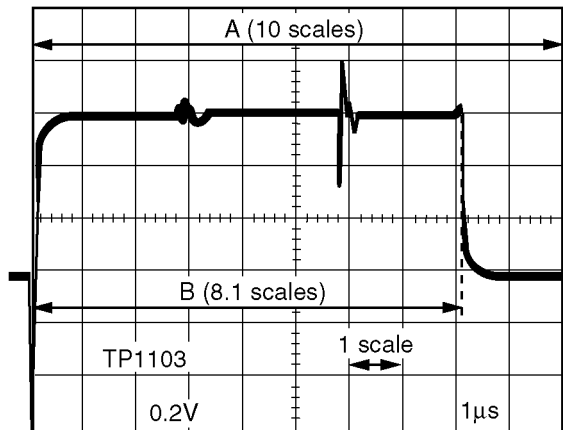


Fig. E2

7.3.6. VCR PWM (PULSE WIDTH MODULATION) DUTY CONTROL ADJUSTMENT

Note:

In this adjustment, the unit is powered off 5 seconds from the moment it is powered on by connecting a resistor (100ohm) between TP1102 and TP1104 on the Sub Power C.B.A. This is due to the function of the unit's Microprocessor (IC6001) protect circuit. Therefore, to perform this adjustment, the unit must repeatedly be powered back on. (Pressing the power button twice will power the unit back on.)

Purpose: To set the optimum PWM duty control for VCR output voltage circuit.

Symptom of Misadjustment: The unit will be powered off or the unit will not work correctly.

Test Point: TP1102, TP1104 (Sub Power C.B.A.)

Adjustment: R1120 (Sub Power C.B.A.)

Specification: Refer to descriptions below.

Mode: STOP

Equipment: Oscilloscope

1. Connect TP1102 and TP1104 through a resistor (100 ohm).
Then, connect oscilloscope to TP1102(+) and TP1104(-) on the Sub Power C.B.A.
2. Apply AC120V to AC cord of the unit and press POWER button on the Main C.B.A.
3. Set the oscilloscope so that the "C" becomes 10 scales on the oscilloscope as shown in Fig. E3.
4. Turn R1120 on the Sub Power C.B.A. fully counterclockwise.
5. While slowly turning R1120 on the Sub Power C.B.A., adjust to the first point that "D" becomes 8.2 scale on the oscilloscope as shown in Fig. E3.
6. After this adjustment is complete, power off the unit first.
And then, disconnect a resistor (100 ohm).

Caution:

Do not connect or disconnect a resistor (100 ohm) while the unit is powered on. If not, the unit may be damaged.

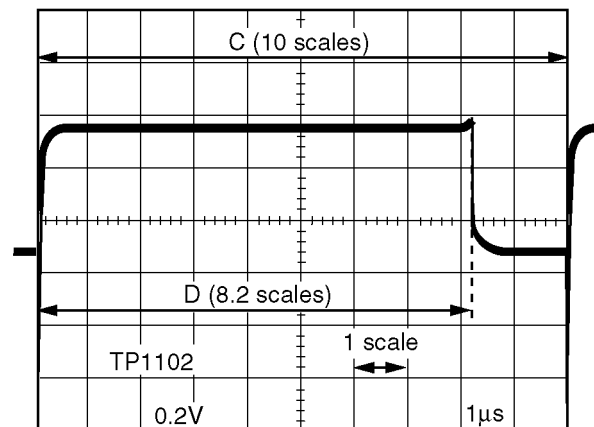


Fig. E3

7.3.7. EVR (Electronic Variable Register) ADJUSTMENT WITH THE REMOTE CONTROL

This unit has electronic technology using IIC Bus concept.

The following control functions are adjusted by using "On Screen Displays" and the remote control instead of adjusting mechanical controls (VR).

Control functions	※2 Address	Range	Default
SUB COLOR	00	C0 – FF, 00 – 3F	00
SUB TINT	01	E0 – FF, 00 – 1F	00
SUB BRIGHT	02	C0 – FF, 00 – 3F	F0
CONTRAST	03	C1 – FF, 00	00
SUB SHARPNESS	04	E0 – FF, 00 – 1F	00
R CUT -OFF	05	00 – 7F	1E
G CUT -OFF	06	00 – FD	3C
B CUT -OFF	07	00 – FD	3C
G DRIVE	08	00 – 7F	40
B DRIVE	09	00 – 7F	40
SUB CONTRAST	0A	00 – 0F	06
H CENTER	0B	00 – 0F	08
SUB V	0C	00	00
V SIZE	0D	00 – 7F	40
V POSITION	0E	00 – 7F	40
ANR CTL	10	00 – EF	85
PICTURE CTL	11	00 – EF	82
VV COLOR ※1	12	C0 – FF, 00 – 3F	00
VV TINT ※1	13	E0 – FF, 00 – 1F	00
VV SHARPNESS	14	E0 – FF, 00 – 1F	F8
PG SHIFTER	15	01 – FD	80

Bold-faced letters → Control functions which need to be adjusted.

Note:

※1 After "SUB COLOR/SUB TINT ADJUSTMENT" is complete, perform as follows.

- Write the same value of SUB COLOR (Address 00) to VV COLOR (Address 12).
- Write the same value of SUB TINT (Address 01) to VV TINT (Address 13).

※2 Address is not displayed on the TV screen.

Other Addresses except above are not used.

7.3.8. EVR ADJUSTMENT ITEM

The following Items need to be adjusted for EVR adjustment.

- PG SHIFTER ADJUSTMENT
- SUB CONTRAST ADJUSTMENT
- CUT OFF, DRIVE ADJUSTMENT
- SUB COLOR/SUB TINT ADJUSTMENT
- V. HEIGHT/H. POSITION ADJUSTMENT
- WHITE BALANCE ADJUSTMENT
- SUB BRIGHTNESS ADJUSTMENT

7.3.9. HOW TO ENTER EVR ADJUSTMENT MODE

Press and hold STOP, PLAY, and VOL DOWN buttons on the unit together over 5 seconds with no cassette inserted.

The adjustment overlay will appear.

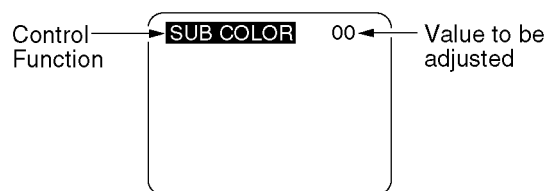


Fig. E4-1

How to adjust:

1. Press CH UP/DOWN key on the remote control to select control function to be adjusted.

Important Note:

Make a note of the original value of the controls before modifying in case the wrong control is adjusted.

2. Press VOL UP/DOWN key on the remote control so that the shaded area moves to the value.

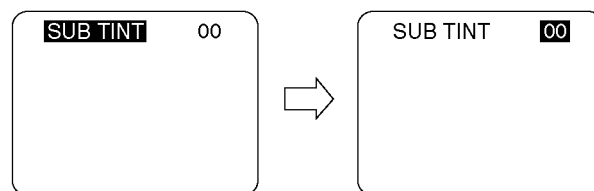


Fig. E4-2

3. Press CH UP/DOWN key on the remote control to adjust the value of the selected control.

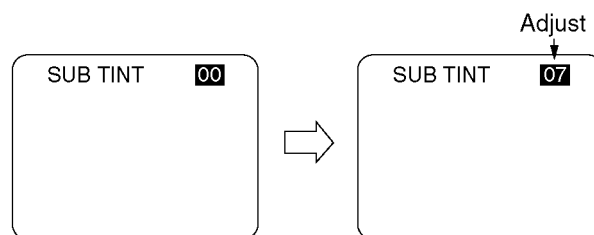


Fig. E4-3

Note:

You can select a desired channel by using the numbered keys on the remote control in EVR adjustment mode.

4. Press VOL UP/DOWN key on the remote control so that the shaded area moves to the control function.

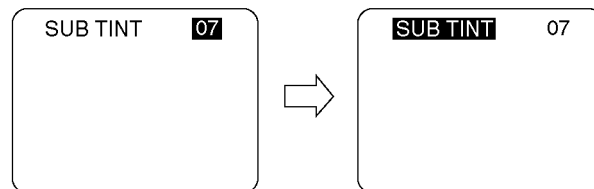


Fig. E4-4

5. Press CH UP/DOWN key on the remote control to select a control function for the next adjustment if necessary.

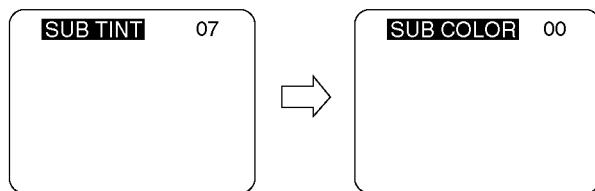


Fig. E4-5

How to release from EVR Adjustment Mode:

Press and hold STOP, PLAY, and VOL DOWN buttons on the unit together over 5 seconds again or press the POWER button OFF.

The adjusted value will be written to Memory IC (IC6004).

7.3.10. HOW TO ENTER EVR PG SHIFTER ADJUSTMENT MODE

1. Enter EVR adjustment mode.
2. Insert the VHS Alignment Tape and playback in SP mode.
The adjustment overlay will appear.

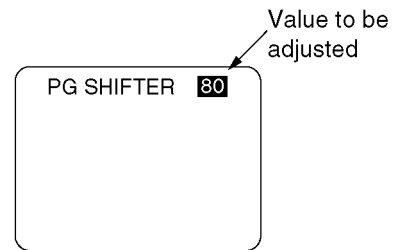


Fig. E4-6

How to adjust:

Press CH UP/DOWN key on the remote control to adjust the value.

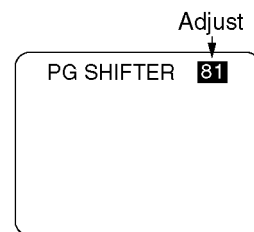


Fig. E4-7

How to release from EVR PG Shifter Adjustment Mode:

Press STOP button or press the POWER button OFF.

The adjusted value will be written to Memory IC (IC6004).

7.3.11. HOW TO ENTER SERVICE MODE

1. Enter EVR adjustment mode.
2. Press DISPLAY key on the remote control for collapse scan.

Note:

Before pressing DISPLAY key on the remote control for collapse scan, select the desired control function and move the shaded area to the value for adjustments you will proceed.

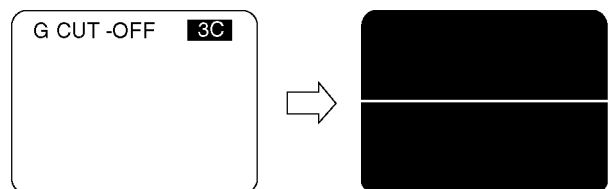


Fig. E4-8

How to release from Service Mode:

Press DISPLAY key again on the remote control.

7.3.12. PG SHIFTER ADJUSTMENT

Purpose: Determine the Video Head Switching Point during Playback.

Symptom of Misadjustment: May cause Head Switching Noise and/or Vertical Jitter.

Test Point : **TP3001 (Main C.B.A.)**
TP6205 (Main C.B.A.)

Adjustment : **PG SHIFTER (EVR)**

Specification : **$T = 6 \pm 1H$ ($0.38 \pm 0.06\text{msec.}$)**

Input : -----

Mode : SP Playback

Equipment : Oscilloscope,
VHS Alignment Tape (VFMS0003H6)

1. Enter EVR PG Shifter Adjustment mode, refer to "HOW TO ENTER EVR PG SHIFTER ADJUSTMENT MODE."
2. Connect the channel-1 scope probe to TP3001 and the channel-2 scope probe to TP6205. Trigger from channel-2.
3. Adjust value so that the trailing edge of the head switching pulse is placed $6H \pm 1H$ ($0.38 \pm 0.06\text{msec.}$) before the start of the vertical sync pulse.
4. Release EVR PG Shifter Adjustment Mode.

The adjusted value will be written to Memory IC (IC6004).

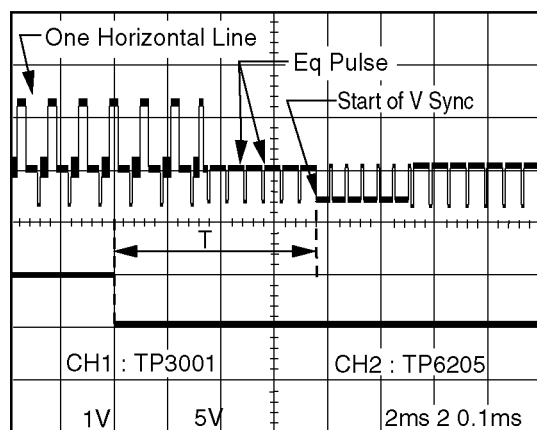


Fig. E5

7.3.13. SUB CONTRAST ADJUSTMENT

Purpose: To set the optimum sub contrast level.

Symptom of Misadjustment: The picture is too dark or too light.

Test Point : **Pin 5 of P6001 (Main C.B.A.)**
or TP49 (CRT C.B.A.)

Adjustment : **SUB CONTRAST (EVR)**

Specification : **$3.0 \pm 0.1V_{p-p}$**

Input : Video Input Jack
Crosshatch Pattern Signal $1V_{p-p}$
(75 ohm terminated)

Mode : STOP

Equipment : Oscilloscope, NTSC Video Pattern Generator

1. Supply a Crosshatch Pattern Signal to the Video Input Jack.
2. Connect the Oscilloscope to Pin 5 of P6001 on the Main C.B.A. or TP49 on the CRT C.B.A.
3. Select SUB BRIGHT in EVR adjustment mode. Then, after making a note of the original value, adjust to the (D0).
4. Select SUB CONTRAST in EVR adjustment mode and adjust so that the level A is $2.4 \pm 0.1V_{p-p}$.
5. Select SUB BRIGHT in EVR adjustment mode and reset to the original value.

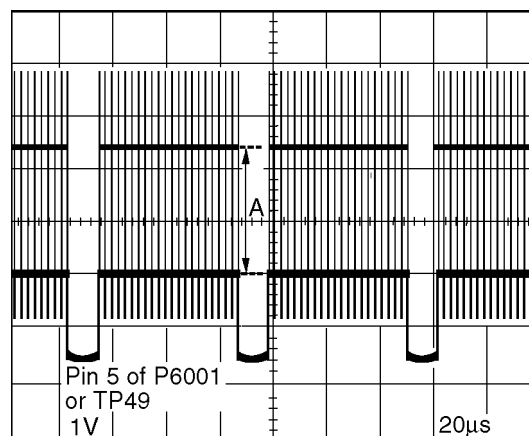


Fig. E6

7.3.14. FOCUS, SCREEN, CUT OFF, DRIVE ADJUSTMENT

Purpose: To set the optimum Focus and Screen.

Symptom of Misadjustment: The picture is out of Focus and there will be an improper screen color mix.

Test Point : TP50 (CRT C.B.A.)

Adjustment : FOCUS CONTROL (Flyback Transformer),
SCREEN CONTROL (Flyback Transformer),
SUB BRIGHT (EVR),
B DRIVE (EVR),
R DRIVE (EVR),
B CUT -OFF (EVR),
G CUT -OFF (EVR),
R CUT -OFF (EVR)

Specification : Refer to descriptions below.

Input : Video Input Jack
Monoscope Pattern Signal

Mode : STOP

Equipment : Oscilloscope, NTSC Video Pattern Generator

1. Supply a Monoscope Pattern Signal to the Video Input Jack.
2. Connect the Oscilloscope to TP50 on the CRT C.B.A.
(Use TP47 for GND.)
3. Select SUB BRIGHT and move the shaded area to the value in EVR adjustment mode.
4. Adjust the FOCUS CONTROL on the Flyback Transformer so that the center of picture is the sharpest.
5. Press DISPLAY key (Service Switch) on the remote control for collapse scan. (Refer to "HOW TO ENTER SERVICE MODE.")
6. Turn the SCREEN CONTROL on the Flyback Transformer fully counterclockwise.
7. Adjust SUB BRIGHT in EVR adjustment mode so that the level A is $115 \pm 5\text{VDC}$.

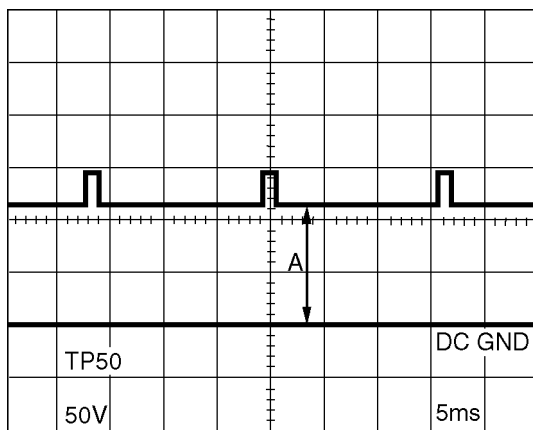


Fig. E7

8. Turn the SCREEN CONTROL on the Flyback Transformer clockwise carefully and stop at the point where any color is first observed.

9. In EVR adjustment mode, select the two colors not observed in step 8 from the following control functions (B CUT -OFF, G CUT -OFF, or R CUT -OFF) and adjust so that the horizontal line becomes white.

For example, if the horizontal line appeared red in step 8, select and adjust the B CUT -OFF and G CUT -OFF.

10. Press DISPLAY key on the remote control again to return for full frame scan.
11. Select SUB BRIGHT in EVR adjustment mode and adjust so that the picture has adequate brightness.
12. Select G DRIVE and B DRIVE in EVR adjustment mode and adjust so that the entire screen is white.

Note:

Before pressing DISPLAY key on the remote control for collapse scan, select the desired control function and move the shaded area to the value.

7.3.15. SUB COLOR/SUB TINT ADJUSTMENT

Purpose : To set the standard color phase.

Symptom of Misadjustment : Color phase will be shifted.

Test Point : Pin 5 of P6001 (Main C.B.A.)
or TP49 (CRT C.B.A.)

Adjustment : SUB COLOR (EVR),
SUB TINT (EVR)

Specification: $C = 1.1 \pm 0.15\text{Vp-p}$

Input : Video Input Jack
Rainbow Color Bar

Mode : STOP

Equipment : Oscilloscope, NTSC Video Pattern Generator

1. Supply the Rainbow Color Bar signal to Video Input Jack.
2. Select SUB BRIGHT in EVR adjustment mode. Then, after making a note of the original value, adjust to the minimum (C0).
3. Connect the Oscilloscope to Pin 5 of P6001 on the Main C.B.A. or TP49 on the CRT C.B.A.
4. Select SUB TINT in EVR adjustment mode and adjust so that level A and B should be equal in amplitude.

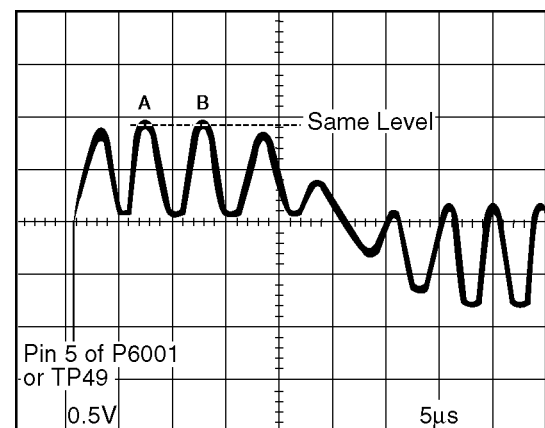


Fig. E8-1

5. Select SUB COLOR in EVR adjustment mode and adjust so that the level C is 1.1 \pm 0.15Vp-p.

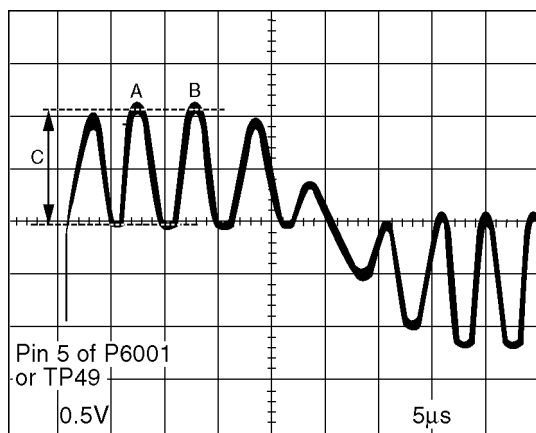


Fig. E8-2

6. Select SUB BRIGHT in EVR adjustment mode and reset to the original value.

Note:

After "SUB COLOR/SUB TINT ADJUSTMENT" is complete, perform as follows.

- Write the same value of SUB COLOR (Address 00) to VV COLOR (Address 12).
- Write the same value of SUB TINT (Address 01) to VV TINT (Address 13).

7.3.16. PURITY ADJUSTMENT

Purpose: To set the uniform white over the whole screen.

Symptom of Misadjustment: The white screen will vary from area to area.

Test Point : -----

Adjustment : **Pair of 4-Pole Convergence Magnet Rings,**
Pair of 6-Pole Convergence Magnet Rings, Pair of Purity Magnet Rings,
Deflection Yoke (CRT Unit),
G CUT -OFF (EVR)

Specification : **Refer to descriptions below.**

Input : Video Input Jack
Crosshatch Pattern Signal,
White Pattern Signal

Mode : STOP

Equipment : Degaussing Coil,
NTSC Video Pattern Generator,
White Pattern Generator

1. Remove the wedges from the CRT.
2. Slide the Deflection Yoke forward to the end of the CRT neck.
Set the Convergence Yoke as specified.
3. Power the unit "ON" and degauss the CRT by the Degaussing Coil.
4. Supply the Crosshatch Pattern Signal to Video Input Jack.
5. Turn the pair of 4-Pole Convergence Magnet Rings so that B and R at the center of CRT overlap each other.
6. Turn the pair of 6-Pole Convergence Magnet Rings so that B and R which overlapped each other in Step 5 overlap G.
7. Supply a White Pattern Signal to Video Input Jack.
8. Select G CUT -OFF in EVR adjustment mode and adjust it to become to the minimum level. Turn the Pair of Purity Magnet Rings so that the distorted color areas are approximately across from each other.
Slide the Deflection Yoke back slightly (without rotating it) until the distorted color areas disappear from the screen.
9. Supply a Crosshatch Pattern Signal to Video Input Jack again. Confirm that the Center Bar is at the horizontal center line of the CRT and the V-Center Bar is at the vertical center line of the CRT. Then, tighten the Expansion Screw.
10. Press DISPLAY key (Service Switch) on the remote control for collapse scan. (Refer to "HOW TO ENTER SERVICE MODE.")
Select G CUT -OFF in EVR adjustment mode and Adjust so that the horizontal line is white.
11. Press DISPLAY key on the remote control again to return for full frame scan. Make sure that the entire screen is white. If not, adjust G DRIVE and B DRIVE in EVR adjustment mode.

Note:

Before pressing DISPLAY key on the remote control for collapse scan, select the desired control function and move the shaded area to the value.

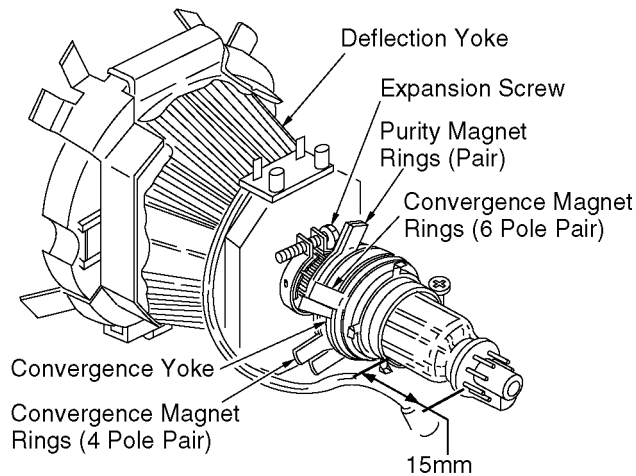


Fig. E9

7.3.17. STATIC CENTRAL CONVERGENCE ADJUSTMENT

Purpose: To set the uniform convergence over the whole screen.

Symptom of Misadjustment: The convergence on the screen will vary from the center portion to the surrounding edges.

Test Point : -----

Adjustment : **Pair of 4-Pole Convergence Magnet Rings,**
Pair of 6-Pole Convergence Magnet Rings

Specification : **Refer to descriptions below.**

Input : Video Input Jack
Crosshatch Pattern Signal

Mode : STOP

Equipment : NTSC Video Pattern Generator

1. Supply a Crosshatch Pattern Signal to the Video Input Jack.
2. Turn the Pair of 4 - Pole Convergence Magnet Rings so that B and R, at center of CRT, overlap each other.
3. Turn the Pair of 6 - Pole Convergence Magnet Rings so that B and R, that overlapped each other in step 2 overlaps G.

7.3.18. DYNAMIC CONVERGENCE ADJUSTMENT

Purpose: To set the uniform convergence over the whole screen.

Symptom of Misadjustment: The convergence on the screen will vary at the sides of the CRT.

Test Point : -----

Adjustment : **Deflection Yoke (CRT Unit)**

Specification : **Refer to descriptions below.**

Input : Video Input Jack
Crosshatch Pattern Signal,
White Pattern Signal

Mode : STOP

Equipment : NTSC Video Pattern Generator,
White Pattern Generator

1. Supply a Crosshatch Pattern Signal to the Video Input Jack.
2. Hold the Deflection Yoke and wiggle it up and down to produce the correct Crosshatch Pattern position.

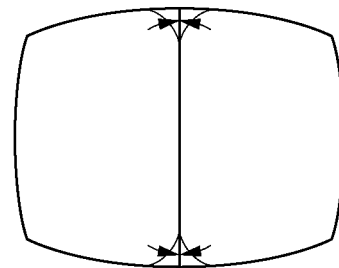


Fig. E10-1

3. Hold Deflection Yoke and wiggle it horizontally (right to left) to produce the correct Crosshatch Pattern position.

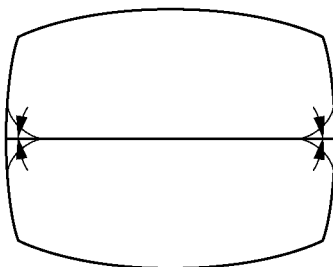


Fig. E10-2

4. Insert three wedges to maintain the correct Crosshatch Pattern Position.

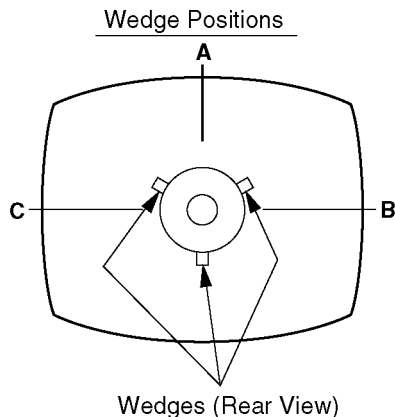


Fig. E10-3

(Confirmation of white)

1. Supply a White Pattern Signal to the Video Input Jack.
2. Confirm that the purity is still correct.
3. If the purity is not acceptable, readjust the purity.

7.3.19. V. HEIGHT/H. POSITION ADJUSTMENT

Purpose : To set the standard vertical and horizontal picture size.

Symptom of Misadjustment : The picture size is on the vertical and horizontal axis is abnormal.

Test Point : -----

Adjustment : **V SIZE (EVR),**
H CENTER (EVR)
V POSITION (EVR)

Specification : **Refer to descriptions below.**

Input : Video Input Jack

Monoscope Pattern Signal

Mode : STOP

Equipment : NTSC Video Pattern Generator

1. Supply a Monoscope Pattern Signal to the Video Input Jack.
2. Select H CENTER in EVR adjustment mode and adjust so that A is approximately equal to width B.
3. Select V SIZE in EVR adjustment mode and adjust so that the top 3rd line is just in view.
4. Confirm that the 10th dotted line is in view and that the 11th line is out of view.

If the line are not positioned correctly, select V POSITION in adjustment mode and adjust correctly.

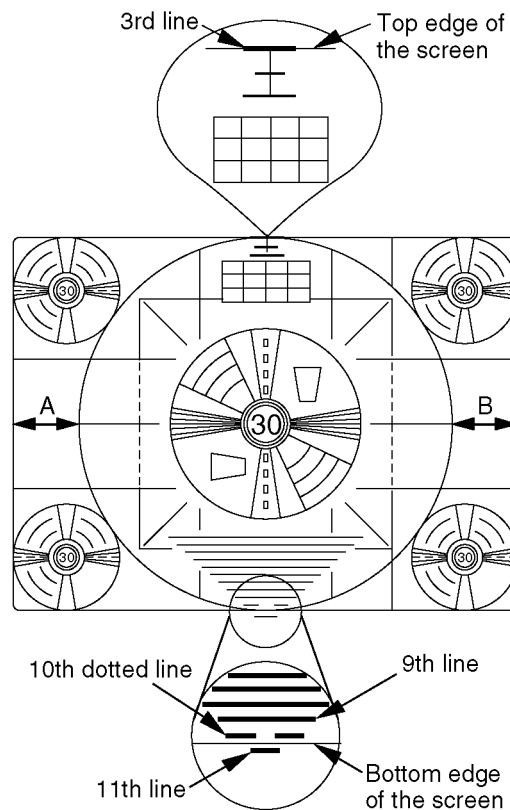


Fig. E11

7.3.20. WHITE BALANCE ADJUSTMENT

Purpose:	To set the standard white level for each color temperature.
Symptom of Misadjustment :	White becomes bluish or reddish.
Test Point :	TP50 (CRT C.B.A)
Adjustment :	FOCUS CONTROL (Flyback Transformer), SCREEN CONTROL (Flyback Transformer), SUB BRIGHT (EVR) G DRIVE (EVR), B DRIVE (EVR), R CUT -OFF (EVR), G CUT -OFF (EVR), B CUT -OFF (EVR),
Specification :	Refer to descriptions below.
Input :	Video Input Jack Monoscope Pattern Signal, White Pattern Signal
Mode :	STOP
Equipment :	NTSC Video Pattern Generator, White Pattern Generator, Oscilloscope

1. Supply a Monoscope Pattern Signal to the Video Input Jack.
2. Connect the Oscilloscope to TP50 on the CRT C.B.A.
(Use TP47E for GND.)
3. Select SUB BRIGHT and move the shaded area to the value in EVR adjustment mode.
4. Adjust the FOCUS CONTROL on the Flyback Transformer so that the center of picture is the sharpest.
5. Press DISPLAY key (Service Switch) on the remote control for collapse scan. (Refer to "HOW TO ENTER SERVICE MODE.")
6. Turn the SCREEN CONTROL on Flyback Transformer fully counterclockwise.
7. Adjust SUB BRIGHT in EVR adjustment mode so that the level A is 115 +/- 5VDC.

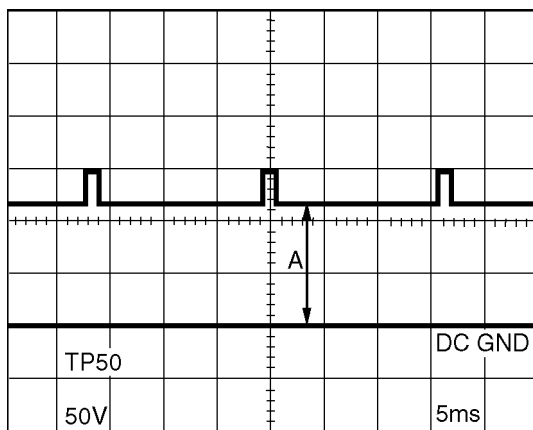


Fig. E12

8. Turn the SCREEN CONTROL on the Flyback Transformer clockwise carefully and stop at the point where any color is first observed.
9. In EVR adjustment mode, select the two colors not observed in step 8 from the following control functions (B CUT -OFF, G CUT -OFF, or R CUT -OFF) and adjust so that the horizontal line becomes white.
For example, if the horizontal line appeared red in step 8, select and adjust the B CUT -OFF and G CUT -OFF.
10. Supply a White Pattern Signal to the Video Input Jack.
11. Press DISPLAY key on the remote control again to return for full frame scan.
12. Select G DRIVE and B DRIVE in EVR adjustment mode and adjust so that the entire screen is white.
13. Select SUB BRIGHT in EVR adjustment mode. Then, after making a note of the original value, adjust to the minimum (C0) and while turning SUB BRIGHT value from minimum (C0) up to maximum (3F), confirm that the screen is tracking the White Pattern properly.
Repeat the above steps 5, 9, 11, and 12 until the screen is properly tracking the White Pattern.

Note:

Before pressing DISPLAY key on the remote control for collapse scan, select the desired control function and move the shaded area to the value.

7.3.21. SUB BRIGHTNESS ADJUSTMENT

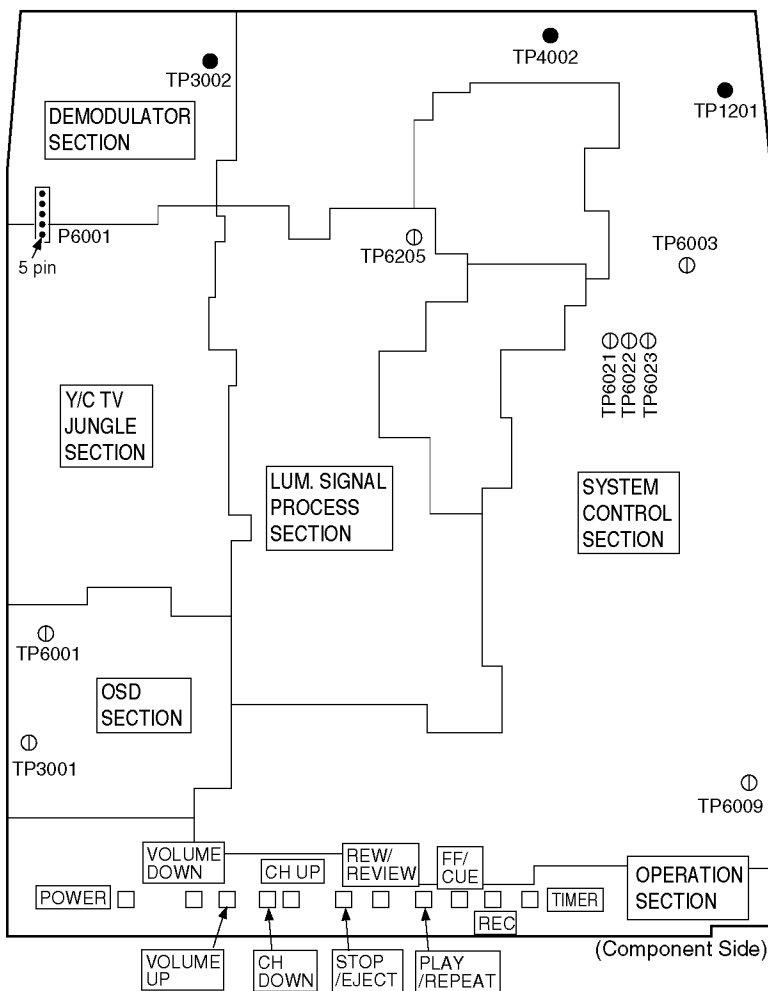
Purpose :	To set the optimum brightness level.
Symptom of Misadjustment :	The picture is too white or too black.
Test Point :	-----
Adjustment :	SUB BRIGHT (EVR)
Specification :	Refer to descriptions below.
Input :	-----
Mode :	STOP

Perform this adjustment in a darkened room.

1. Do not input any signal to the unit.
2. Set INPUT SELECT item to LINE in SET UP TV menu to display black screen.
3. Select SUB BRIGHT in EVR adjustment mode, and adjust so that the black screen starts to turn grey (lighting only).

7.4. TEST POINTS AND CONTROL LOCATION

Main C.B.A.



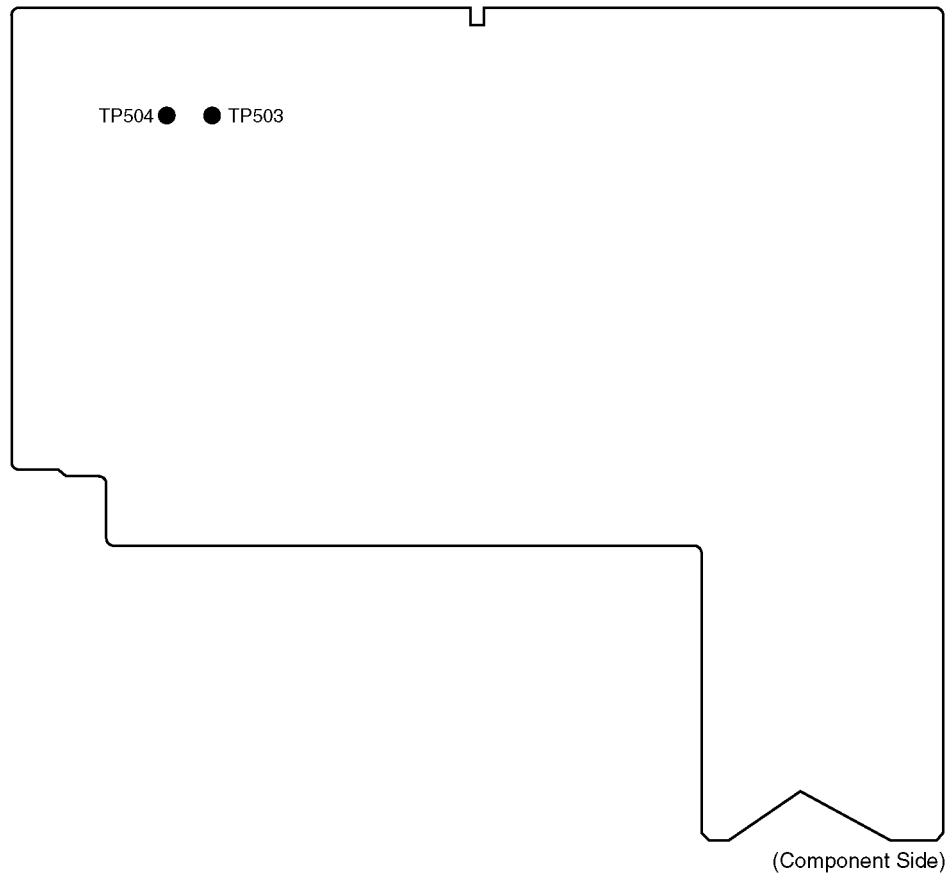
FUNCTION OF IMPORTANT TEST POINTS

TP1201	+14V	
TP3001	Video Signal	
TP3002	REC/PB Video envelope signal	
TP4002	Normal Audio signal	
TP6001	Service Test Point (inhibit sensors)	
TP6003	defeat Auto tracking function (connect to +5V(TP6009))	
TP6009	+5V	
TP6205	Head SW.	
TP6021	Mode Select SW. Position	Mode Position (A)
TP6022		Mode Position (B)
TP6023		Mode Position (C)

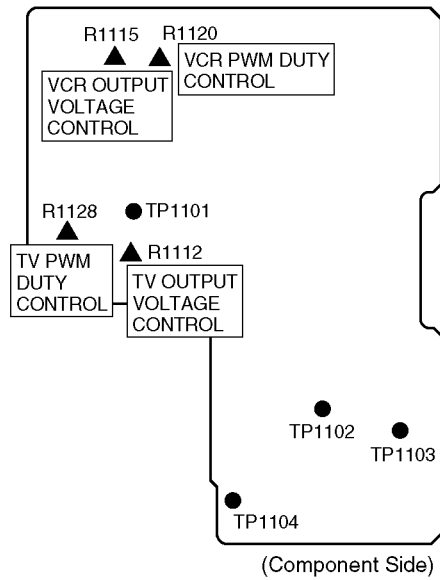
Test Point Information

- Test Point with a Test Pin.
- ⊕ Test Point with a jumper wire across a hole in the P.C.B.
- Test Point with no Test Pin.

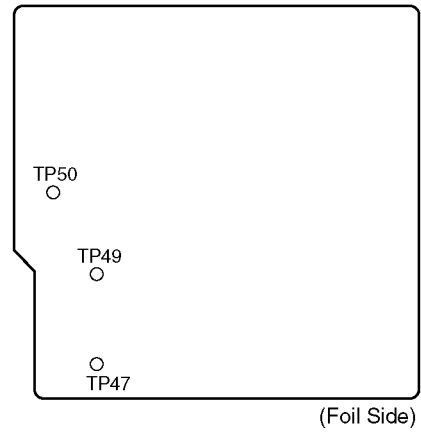
TV Main C.B.A.



Sub Power C.B.A.




CRT C.B.A.



8 SCHEMATIC DIAGRAMS

8.1. SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES

1. Important safety notice

Components identified by the sign  have special characteristics important for safety. When replacing any of these components. Use only the specified parts.

2. Do not use the part number shown on this drawing for ordering.

The correct part number is shown in the parts list, and may be slightly different or amended since this drawing was prepared.

3. Use only original replacement parts:

To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.

4. Parts different in shape or size may be used.

However, only interchangeable parts will be supplied as service replacement parts.

5. Test point information

① :Test point with a jumper wire across a hole in P.C.B.

□→ :Test point with a component lead on the foil side.

⊗ :Test point with no test pin.

● :Test point with a test pin.

Schematic Diagram Notes

1. Indication for Zener Voltage of Zener Diodes

The Zener Voltage of Zener Diodes are indicated as such on Schematic Diagrams.

Example:
(6.2V).....Zener Voltage

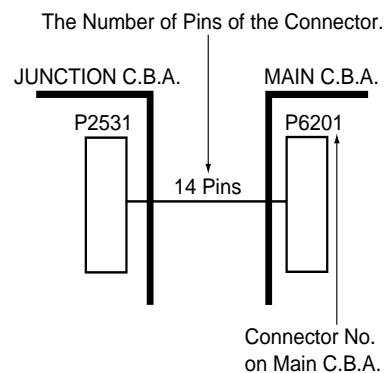
2. How to identify Connectors

Each connector is labeled with a Connector No. and Pin No. Indicating what it is connected to, in other words, its counter part.

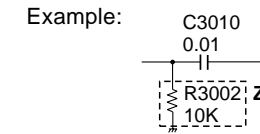
Use the interconnection schematic diagram to find the connection between associated connectors.

Example:

The connections between C.B.A.s are shown below.



3. Parts enclosed in dashed lines marked "Z" are not used in any models included in this service manual.

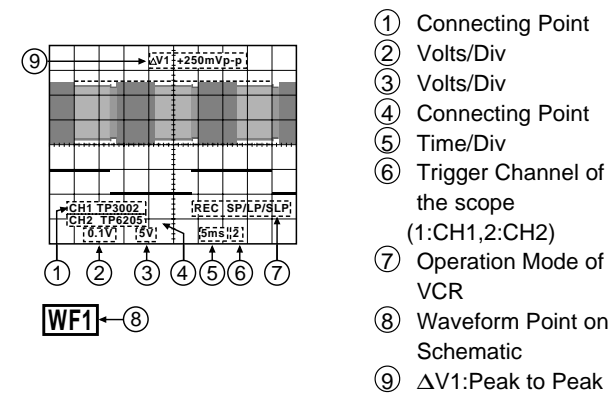


4. The part number shown on this drawing is only main part number,

except for safety parts. Be sure to make your orders of replacement parts according to the parts list.

Signal Waveform Note

How to read Signal Waveform



Voltage Chart Note

Voltage Measurement

a. Color bar signal in SP mode.

b. ---:Unmeasurable or not necessary to measure.

Circuit Board Layout Note

Circuit Board Layout shows components installed for various models.

For proper parts content for the model you are servicing, please refer to the schematic diagram and parts list.

NOTE:

Circuit Board Layout includes components which are not used.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED

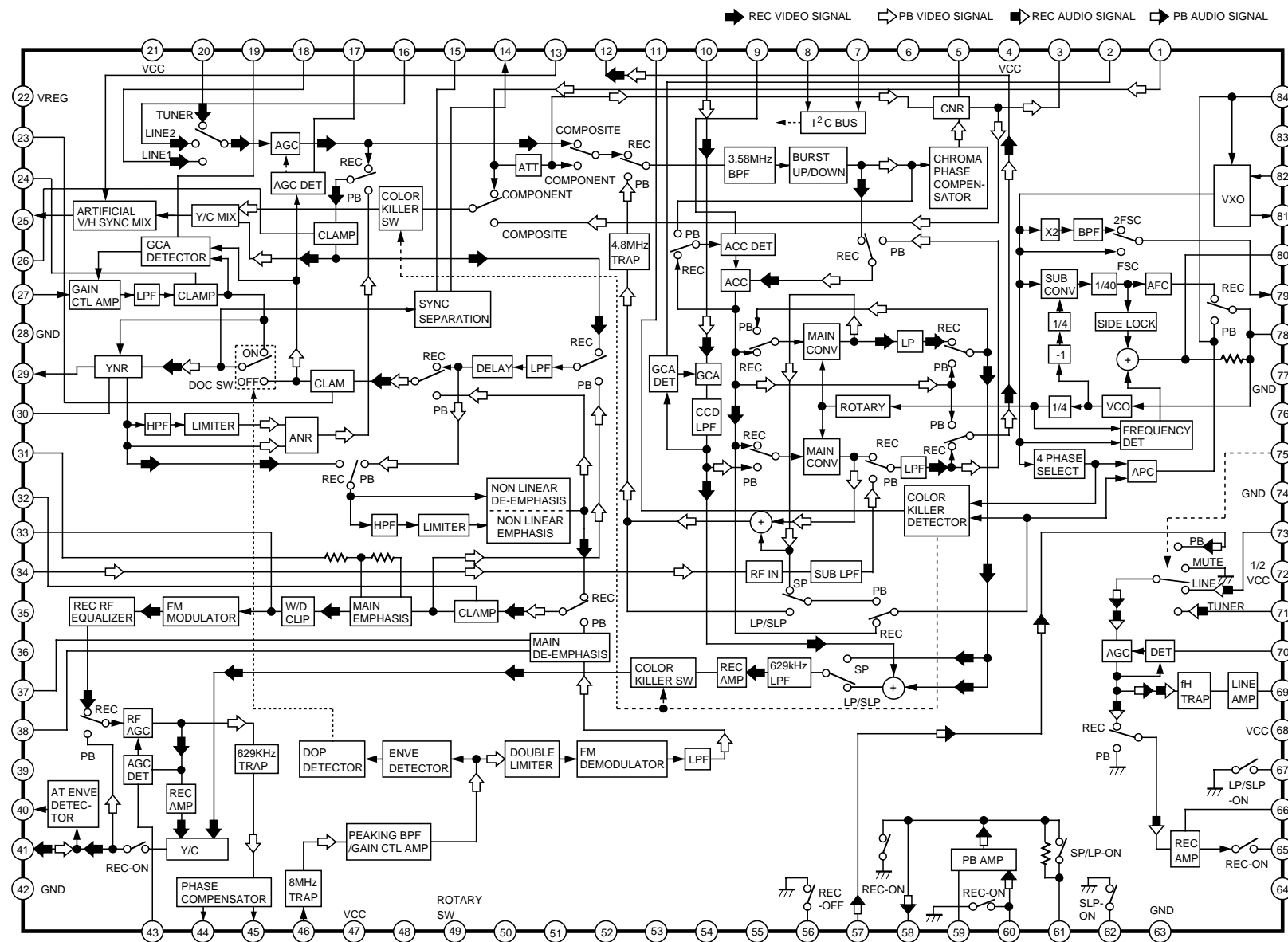
TERMINAL VOLTAGE	0 ~ 0.9V	1.0 ~ 2.5V	2.6 ~ 4.1V
KEY DATA 0 (PIN 73)	CH DOWN	VOLUME DOWN	----
KEY DATA 1 (PIN 74)	CH UP	VOLUME UP	TIMER /FM
KEY DATA 2 (PIN 75)	PLAY /REPEAT	REW/ REVIEW	----
KEY DATA 3 (PIN 76)	STOP /EJECT	REC/TIME	FF/CUE



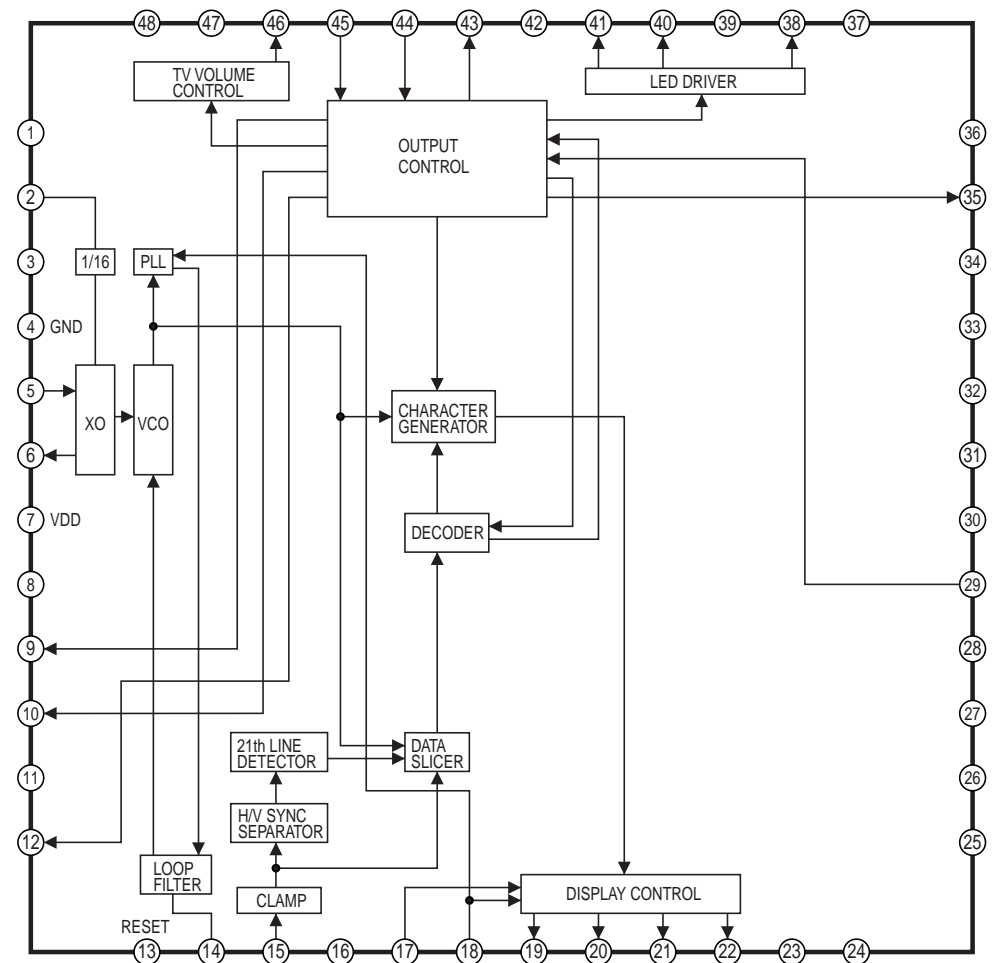
NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.



IC3001 VIDEO/AUDIO PROCESS IC-DETAIL BLOCK DIAGRAM, AN3479FBP



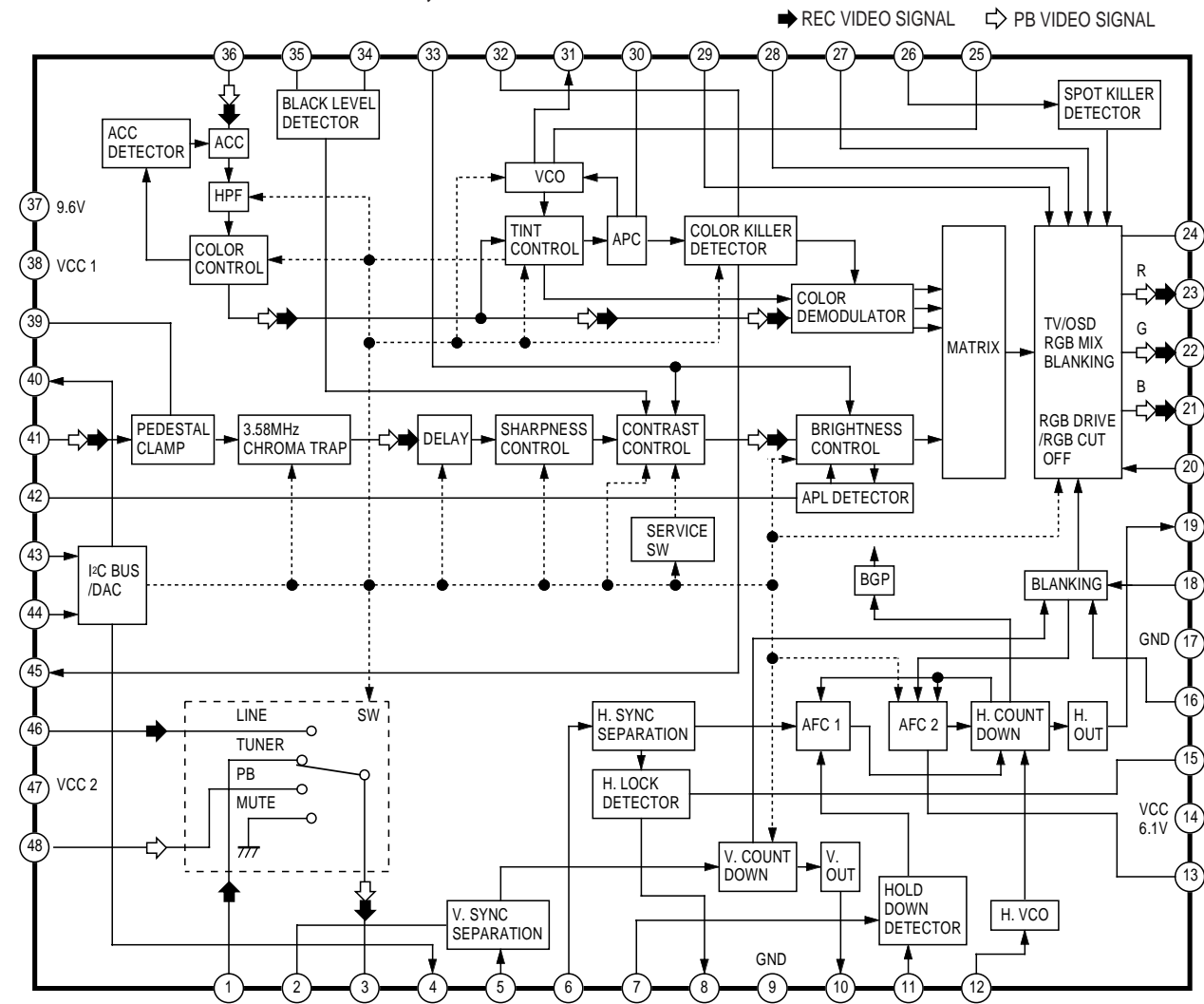
IC3301 8BIT MICROCONTROLLER IC-DETAIL BLOCK DIAGRAM, LC8632165K00
/LC8632165K13



NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.



IC5301 LUMINANCE/CHROMINANCE PROCESS
IC-DETAIL BLOCK DIAGRAM, AN5367FB



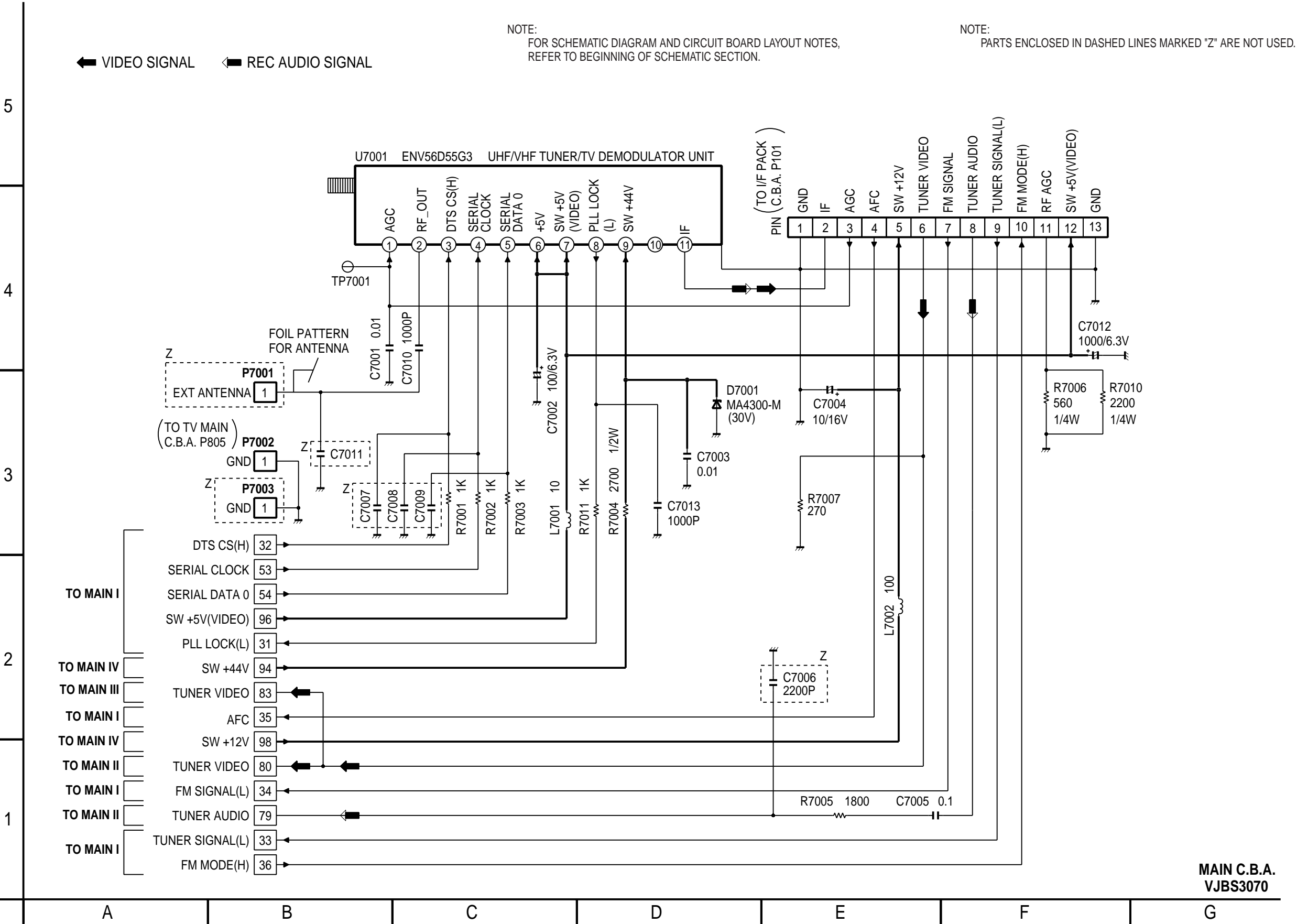
THE FOLLOWING CONTROL FUNCTIONS ARE ADJUSTED BY USING I2C BUS.

- SUB COLOR
- SUB TINT
- SUB BRIGHT
- SUB SHARPNESS
- R CUT-OFF
- G CUT-OFF
- B CUT-OFF
- G DRIVE
- B DRIVE
- SUB CONTRAST
- H CENTER
- V SIZE
- DOT CLOCK

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.




8.6. MAIN V (DEMODULATOR) SCHEMATIC DIAGRAM

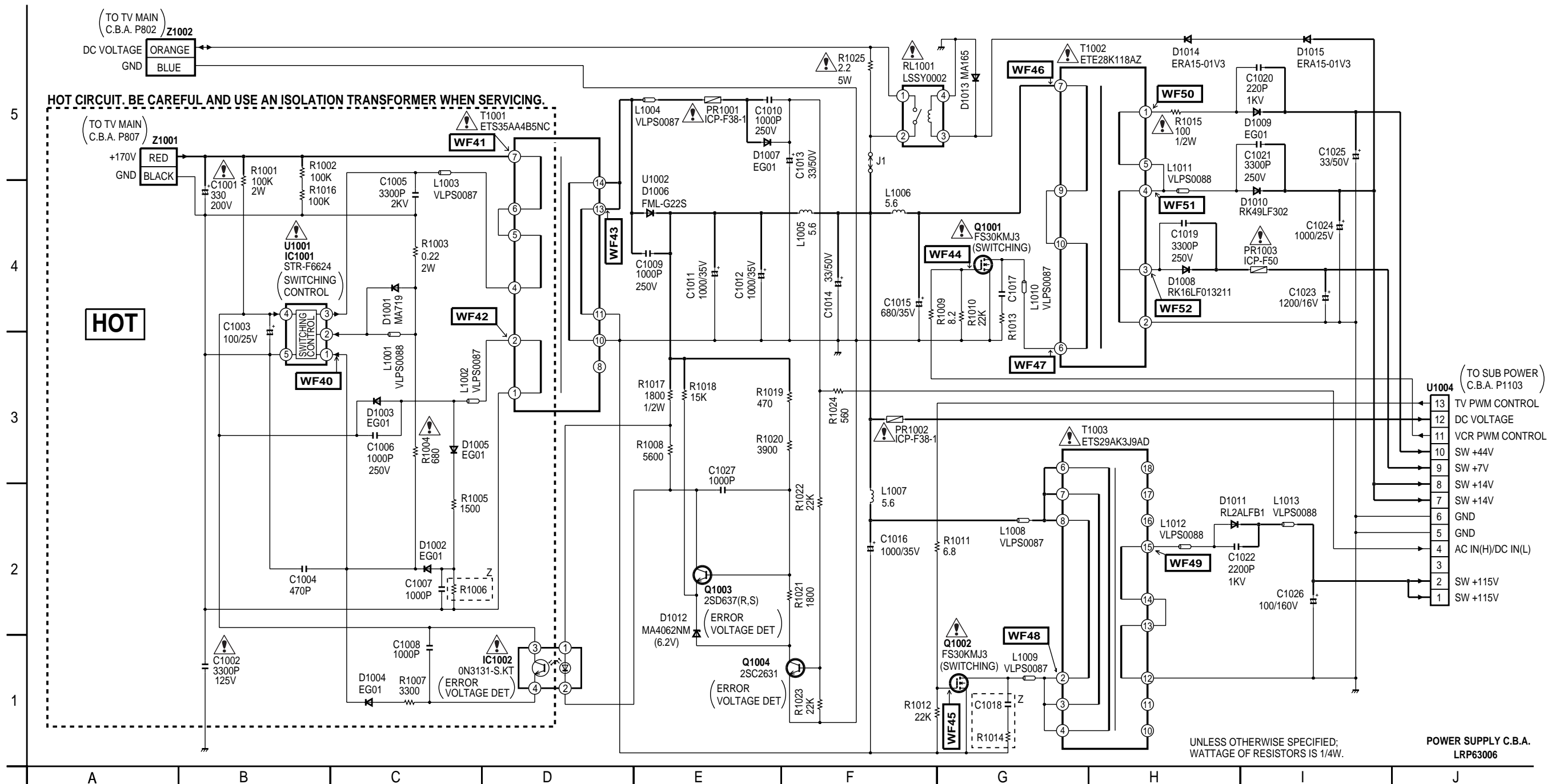


8.7. POWER SUPPLY SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

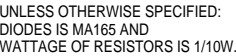
NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.



NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.

The schematic diagram illustrates the internal connections of a 16-pin package. The pins are numbered 1 through 16. Pins 1, 2, 3, 4, 5, 6, 7, and 8 are located along the bottom edge, while pins 9, 10, 11, 12, 13, 14, 15, and 16 are along the top edge. The diagram shows the following internal components and connections:

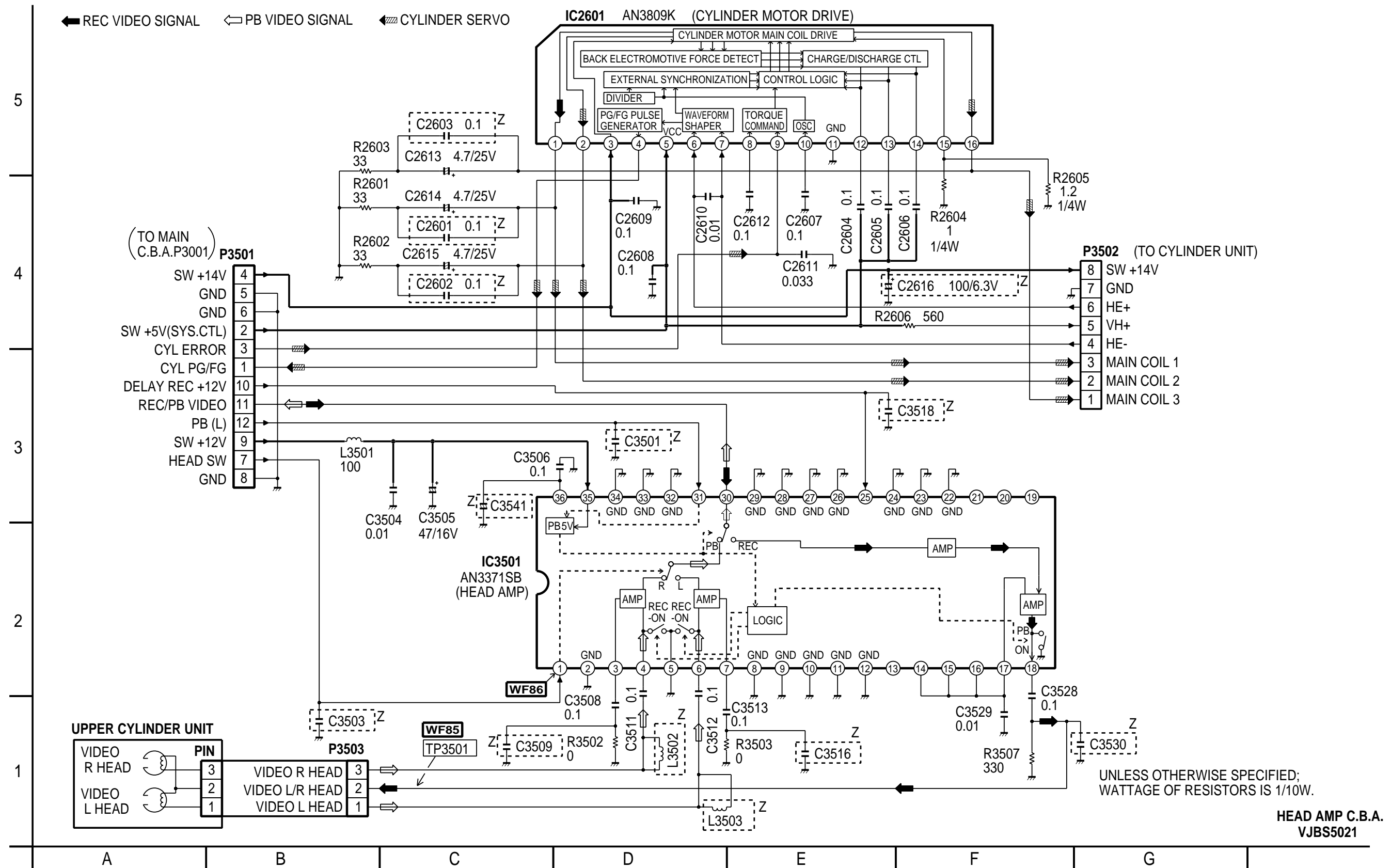
- Triangle Wave Osc (TWO):** Connected to pin 1 (bottom left) and pin 15 (top left).
- Short Circuit Protection (SCP):** A central block connected to pins 13, 12, 11, 10, 9, 8, 7, 6, 5, 4, 3, 2, 1, and pin 14.
- PWM Comparators:** Two comparators are shown. The top comparator has its non-inverting input (+) connected to pin 10 and its inverting input (-) connected to pin 11. The bottom comparator has its non-inverting input (+) connected to pin 7 and its inverting input (-) connected to pin 6.
- Drive Blocks:** Each PWM comparator is connected to a Drive block. The top Drive block is connected to pin 10, and the bottom Drive block is connected to pin 7.
- Power Pins:** Pin 9 is labeled VDD and pin 8 is labeled GND. Pin 16 is labeled V-REF.



8.9. HEAD AMP SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.


NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.



8.10. TV MAIN SCHEMATIC DIAGRAM

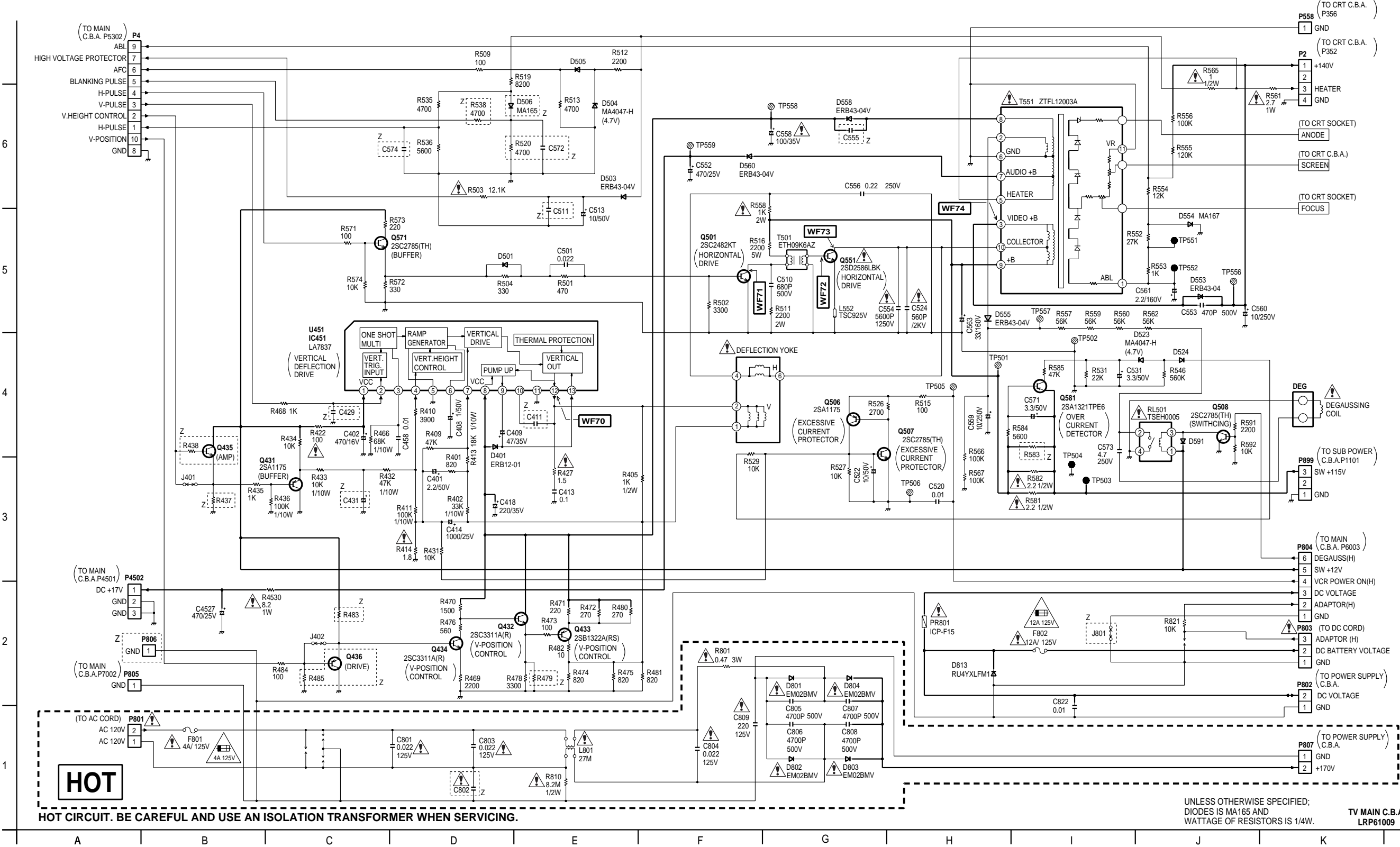
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 4A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D' INCENDIE N' UTILISERQUE DES FUSIBLE DE MÊME
TYPE 4A 125V


CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 12A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D' INCENDIE N' UTILISERQUE DES FUSIBLE DE MÊME
TYPE 12A 125V



UNLESS OTHERWISE SPECIFIED;
DIODES IS MA165 AND
WATTAGE OF RESISTORS IS 1/4W.
TV MAIN C.B.A.
LRP61009

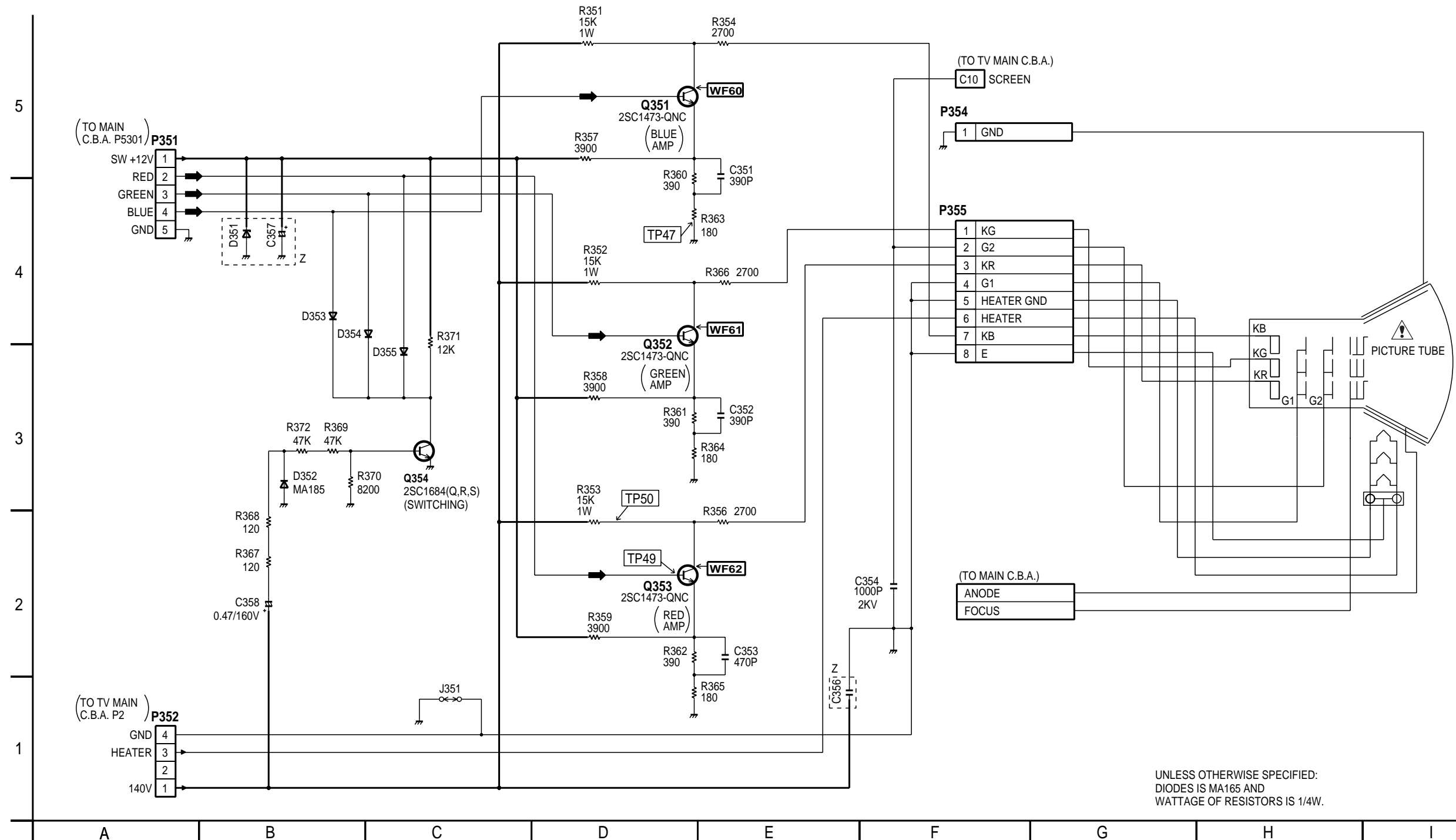
8.11. CRT SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

NOTE:
PARTS ENCLOSED IN DASHED LINES MARKED "Z" ARE NOT USED.

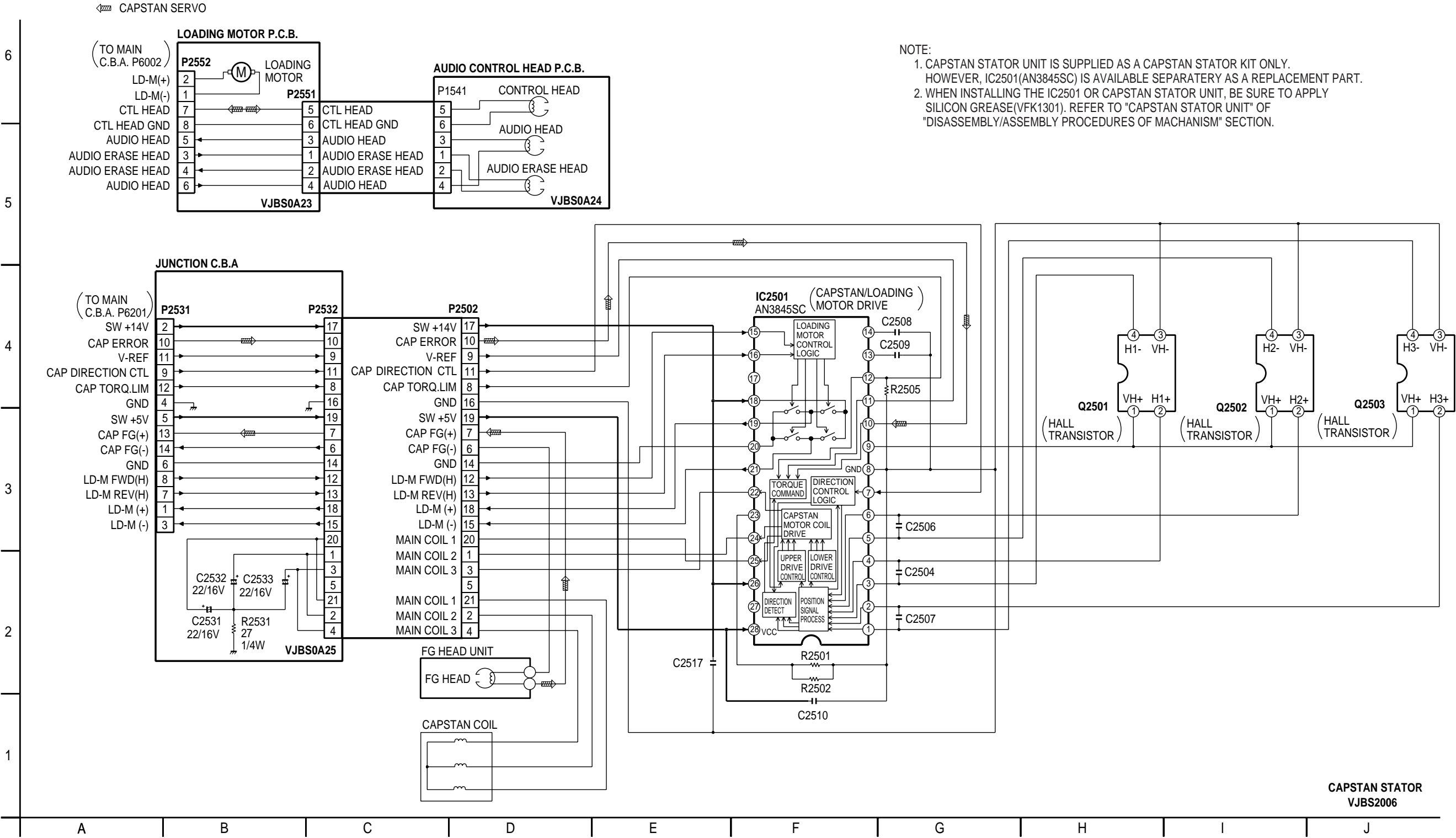
← VIDEO SIGNAL



8.12. CAPSTAN STATOR / JUNCTION / LOADING MOTOR / AUDIO CONTROL HEAD SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

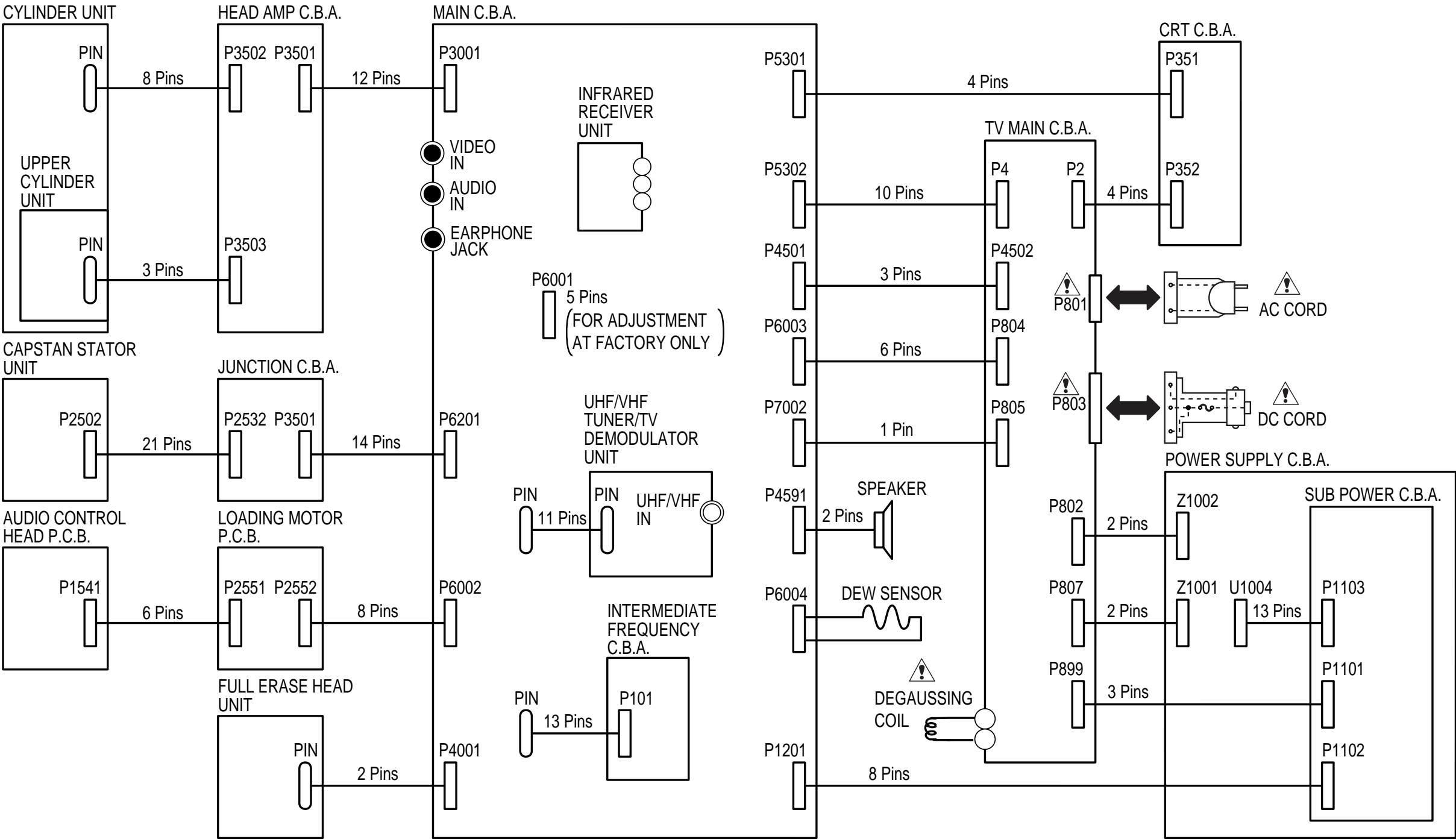
NOTE:
1. CAPSTAN STATOR UNIT IS SUPPLIED AS A CAPSTAN STATOR KIT ONLY.
HOWEVER, IC2501(AN3845SC) IS AVAILABLE SEPARATELY AS A REPLACEMENT PART.
2. WHEN INSTALLING THE IC2501 OR CAPSTAN STATOR UNIT, BE SURE TO APPLY
SILICON GREASE(VFK1301). REFER TO "CAPSTAN STATOR UNIT" OF
"DISASSEMBLY/ASSEMBLY PROCEDURES OF MACHANISM" SECTION.



8.13. INTERCONNECTION SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

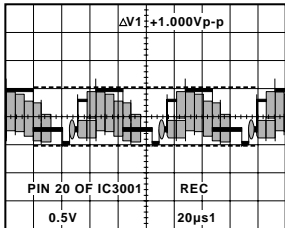
IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.



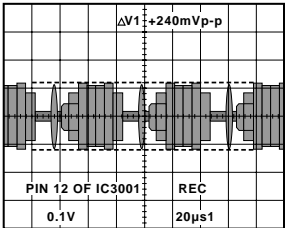
8.14. SIGNAL WAVEFORM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

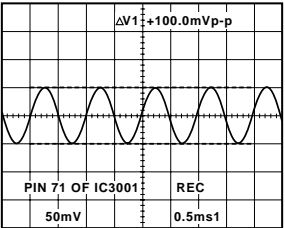
MAIN C.B.A.



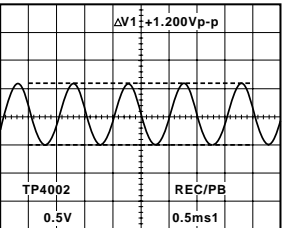
WF1



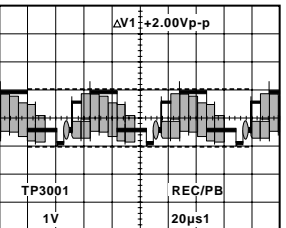
WF6



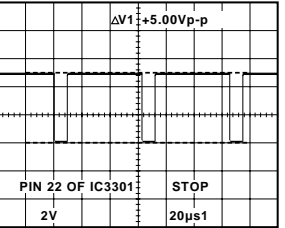
WF9



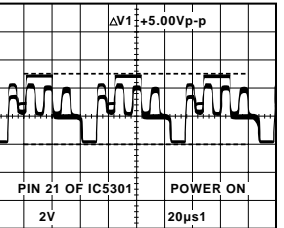
WF14



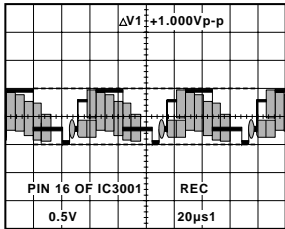
WF18



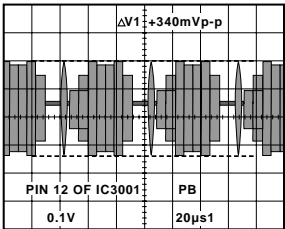
WF21
(BLUE BACK)



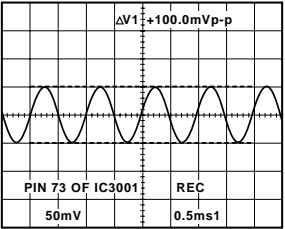
WF27



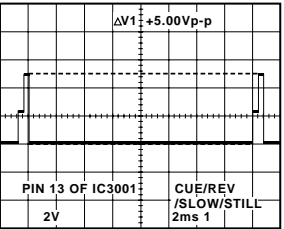
WF2



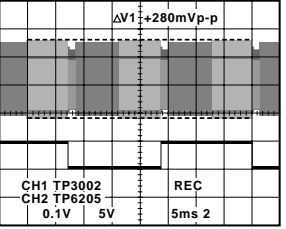
WF6



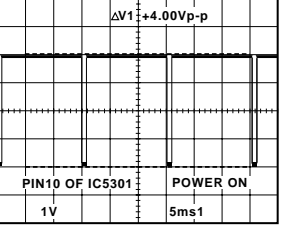
WF10



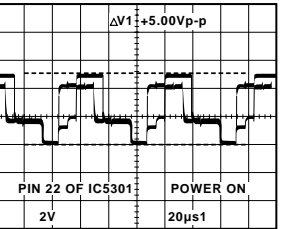
WF15



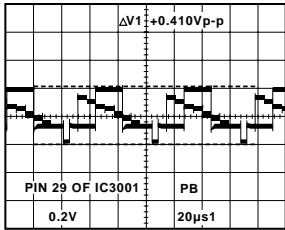
CH1 WF19
CH2 WF34



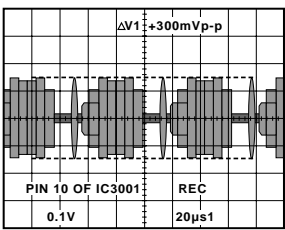
WF23



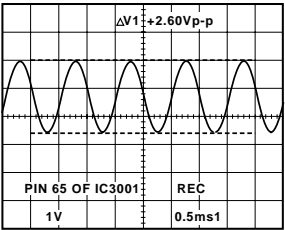
WF28



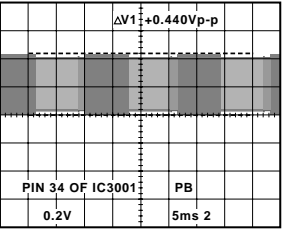
WF3



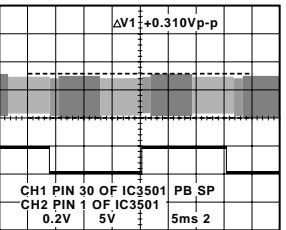
WF7



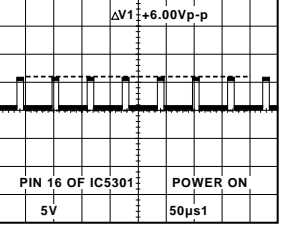
WF11



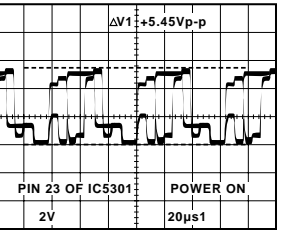
WF16



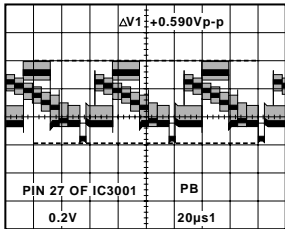
CH1 WF19
CH2 WF34



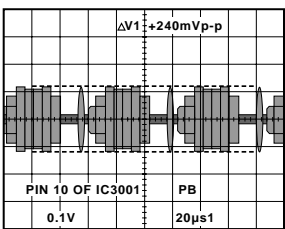
WF24



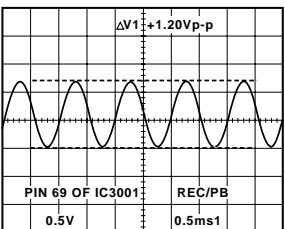
WF29



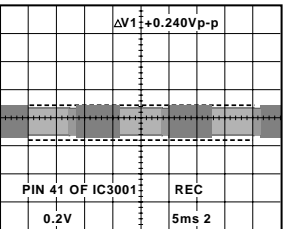
WF4



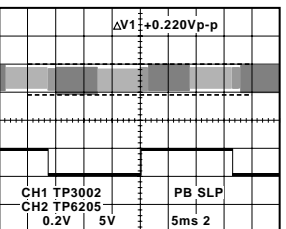
WF7



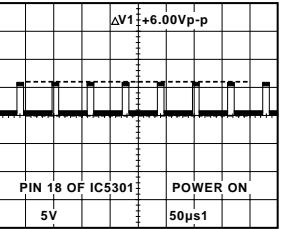
WF12



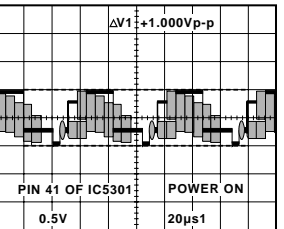
WF17



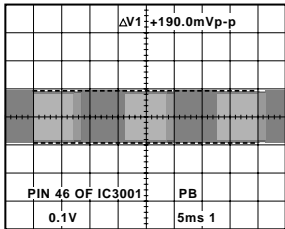
CH1 WF19
CH2 WF34



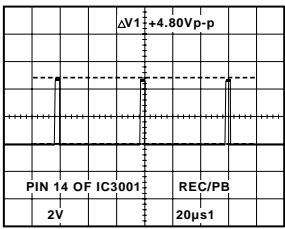
WF25



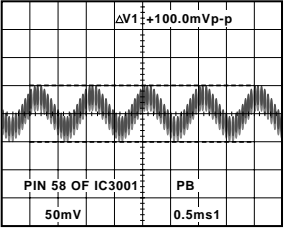
WF30



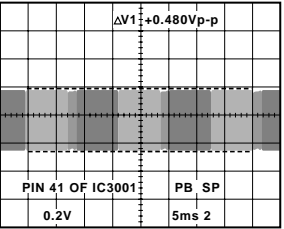
WF5



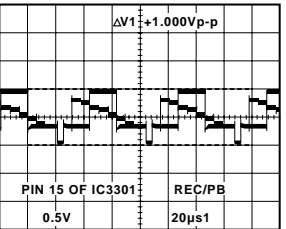
WF8



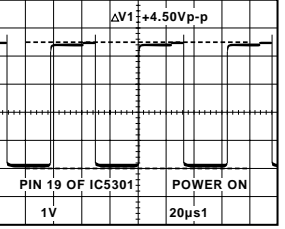
WF13



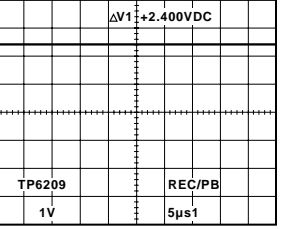
WF17



WF20



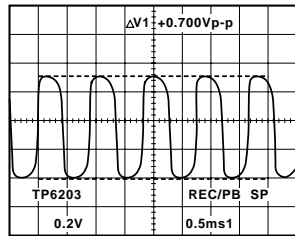
WF26



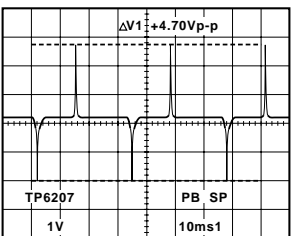
WF31

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

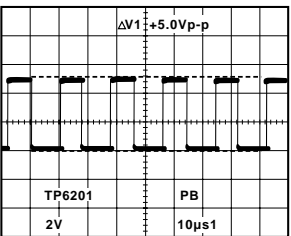
POWER SUPPLY C.B.A.



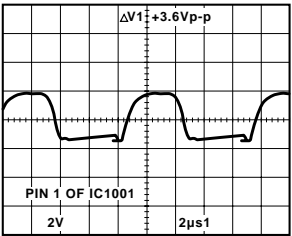
WF32



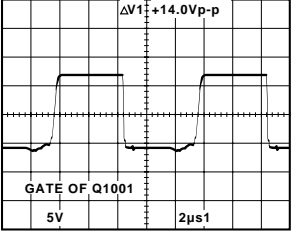
WF35



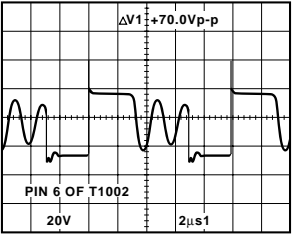
WF38



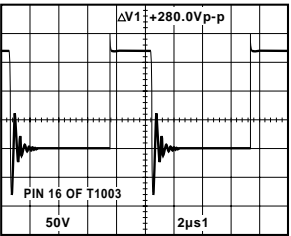
WF40



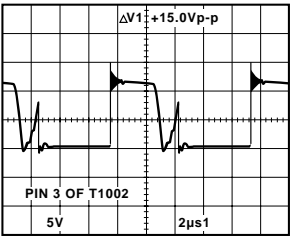
WF44 (DC IN)



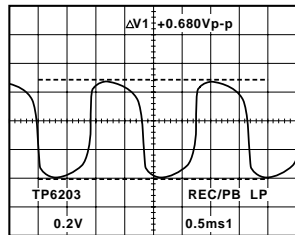
WF47 (AC IN)



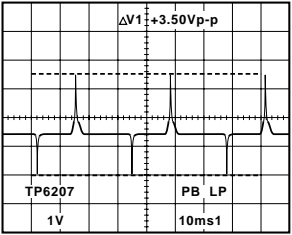
WF49 (DC IN)



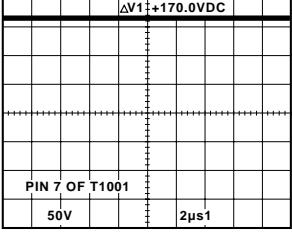
WF52 (DC IN)



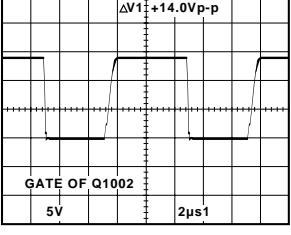
WF32



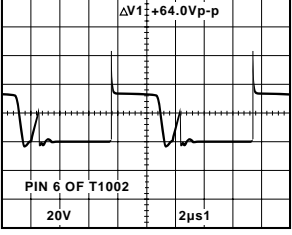
WF35



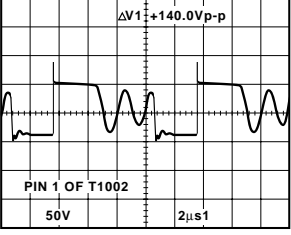
WF41



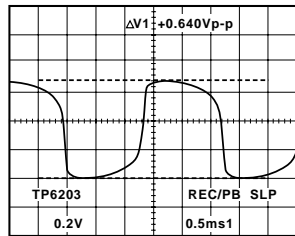
WF45 (AC IN)



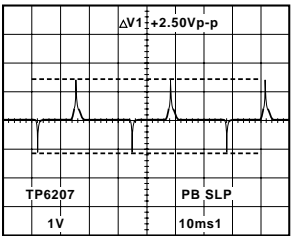
WF47 (DC IN)



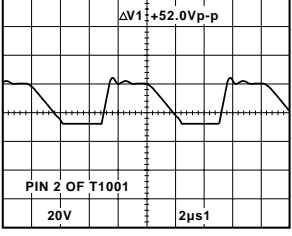
WF50 (AC IN)



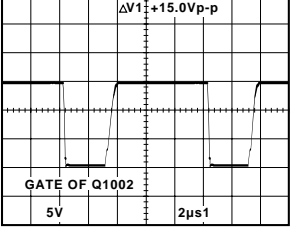
WF32



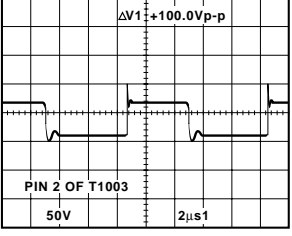
WF35



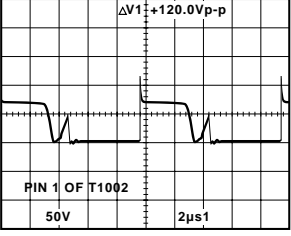
WF42



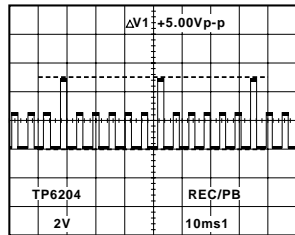
WF45 (DC IN)



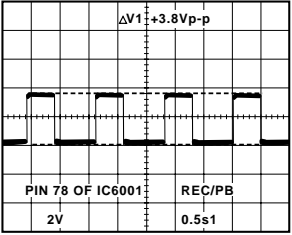
WF48 (AC IN)



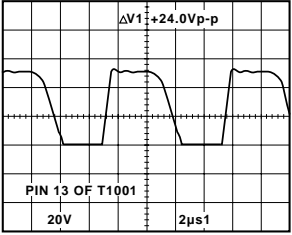
WF50 (DC IN)



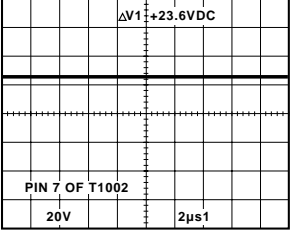
WF33



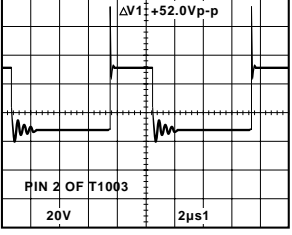
WF36



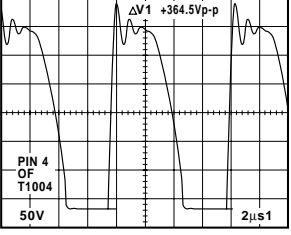
WF43



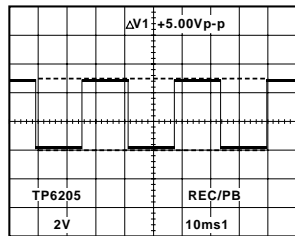
WF46 (AC IN)



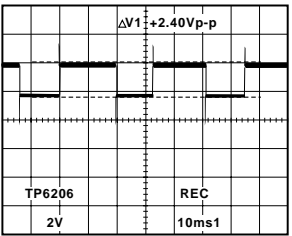
WF48 (DC IN)



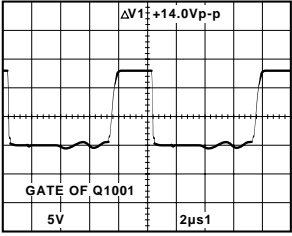
WF51



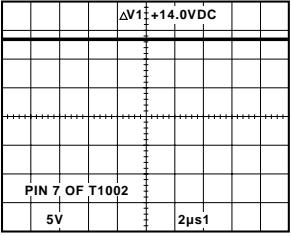
WF34



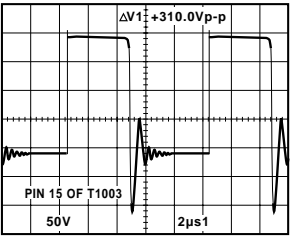
WF37



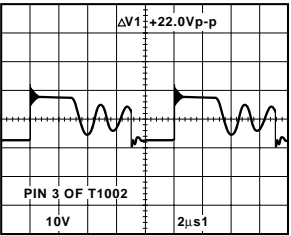
WF44 (AC IN)



WF46 (DC IN)



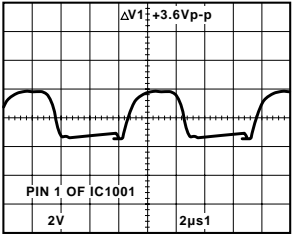
WF49 (AC IN)



WF52 (AC IN)

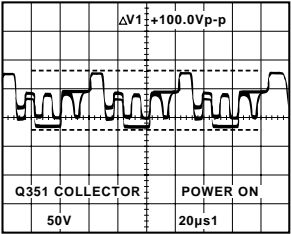
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

SUB POWER C.B.A.



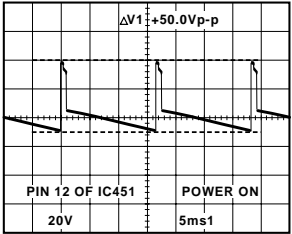
WF54

CRT C.B.A.



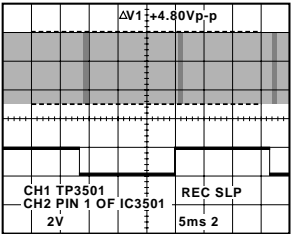
WF60

TV MAIN C.B.A.

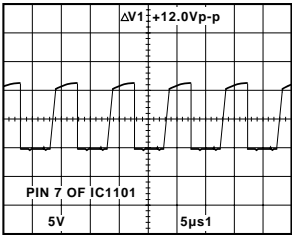


WF70

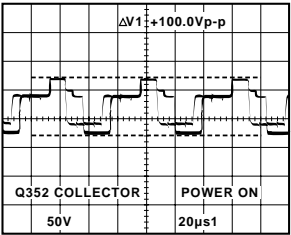
HEAD AMP C.B.A.



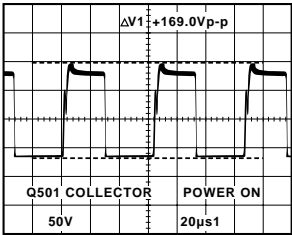
CH1 WF85
CH2 WF86



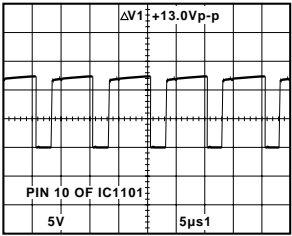
WF55



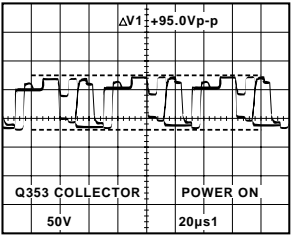
WF61



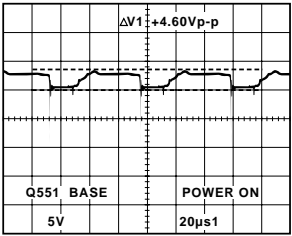
WF71



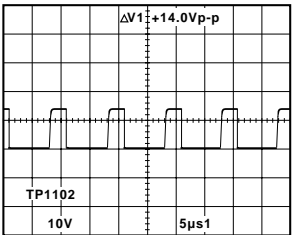
WF56



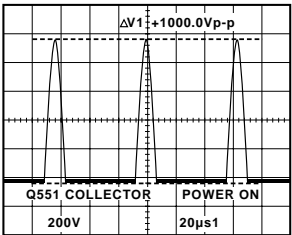
WF62



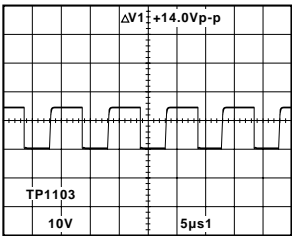
WF72



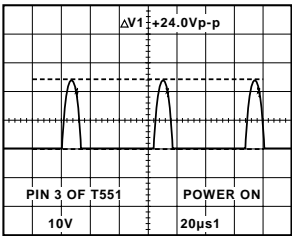
WF57



WF73



WF58



WF74

8.15. VOLTAGE CHART

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

MAIN CIRCUIT

MODE PIN NO.	REC	PLAY
IC3001		
1	5.1	5.1
2	3.4	3.4
3	2.1	2.1
4	5.1	5.1
5	4.3	4.3
6	—	—
7	5.2	5.2
8	5.2	5.2
9	2.2	2.2
10	2.8	2.8
11	0.8	0.8
12	2.8	2.8
13	0.4	0.4
14	0.5	0.5
15	0	0.9
16	3.1	3.8
17	2.4	1.8
18	3.1	5.7
19	2.6	2.6
20	3.1	4.0
21	5.1	5.1
22	0	2.0
23	2.6	2.4
24	2.6	2.4
25	2.0	2.0
26	2.6	2.5
27	2.0	2.0
28	0	0
29	1.9	1.8
30	1.9	1.6
31	2.0	1.2
32	2.4	2.4
33	2.7	2.7
34	3.0	2.8
35	2.6	2.6
36	2.5	2.5
37	0	1.5
38	4.4	2.3
39	0	1.5
40	3.8	2.4
41	0	0
42	0	0
43	3.4	3.3
44	2.6	2.6
45	2.6	2.6
46	2.6	2.6
47	5.1	5.1
48	1.3	1.3
49	2.7	2.7
50	3.8	3.1
51	5.1	5.1
52	2.5	2.5
53	2.5	2.5

MODE PIN NO.	REC	PLAY
54	4.1	0.1
55	0	0
56	0.1	4.4
57	0	2.6
58	2.6	2.6
59	2.6	2.6
60	2.6	2.6
61	2.6	2.6
62	0	0
63	0	0
64	1.6	1.8
65	2.6	2.6
66	0	2.6
67	2.6	0
68	5.2	0
69	2.6	2.6
70	0.3	0
71	2.6	2.6
72	2.6	0
73	2.6	2.6
74	0	0
75	0	0
76	3.3	0
77	0	0
78	2.1	0
79	3.0	0
80	0	2.0
81	—	—
82	—	—
83	2.6	0
84	2.5	0
IC3201		
1	3.4	3.4
2	-2.5	-2.5
3	0	0
4	2.5	2.5
5	2.5	2.5
6	-2.7	-2.7
7	2.1	2.1
8	3.0	3.0
IC3301		
1	0	0
2	0	2.7
3	2.2	2.3
4	0	0
5	2.1	2.3
6	2.3	2.3
7	0	5.2
8	0	0
9	5.2	5.2
10	0	0
11	0	0
12	0	0
13	5.2	5.2

MODE PIN NO.	REC	PLAY
14	0	3.1
15	0	2.9
16	0	0
17	5.0	5.0
18	4.4	4.4
19	0	0
20	0	0
21	0	4.2
22	0	4.3
23	0	0
24	0	0
25	0	0
26	0	0
27	0	0
28	0	0
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	0	0
35	0	0
36	0	0
37	5.2	0
38	2.3	0
39	0	0
40	5.2	0
41	0.4	0
42	0	0
43	4.9	4.9
44	0	3.6
45	0	0
46	0	0
47	0	0
48	0	0
IC4501		
1	12.2	12.2
2	5.5	5.5
3	—	—
4	0	0
5	6.2	6.2
6	6.2	6.2
7	0	0
8	6.3	6.3
9	16.6	16.6
IC5301		
1	2.7	2.7
2	2.5	2.5
3	3.4	3.4
4	3.1	3.1
5	2.1	2.1
6	2.1	2.1
7	6.2	6.2
8	0	0

MODE PIN NO.	REC	PLAY
9	0	0
10	3.8	3.8
11	4.9	4.9
12	2.8	2.8
13	4.2	4.2
14	6.4	6.4
15	4.3	4.3
16	0.6	0.6
17	0	0
18	0.6	0.6
19	2.2	2.2
20	0	0
21	3.7	3.7
22	3.7	3.7
23	3.7	3.7
24	6.0	6.0
25	2.7	2.7
26	9.2	9.2
27	0	0
28	0	0
29	0	0
30	5.8	5.8
31	3.3	3.3
32	3.7	3.7
33	6.3	6.3
34	0	8.3
35	0	4.9
36	4.3	4.3
37	9.7	9.7
38	0	0
39	2.3	2.3
40	2.1	2.1
41	2.0	2.0
42	0	0
43	4.9	4.9
44	4.9	4.9
45	0.4	0.4
46	2.5	2.5
47	5.1	5.1
48	2.7	2.7
IC6001		
1	0	0
2	0	0
3	0	0
4	0	2.6
5	2.4	2.4
6	0	0
7	0	0
8	0	0
9	2.5	2.5
10	0	2.4
11	0	5.1
12	0	4.0
13	0.1	5.3

MODE PIN NO.	REC	PLAY
14	5.2	0
15	0	0
16	—	—
17	0	0
18	—	—
19	—	—
20	5.2	0
21	0	0
22	—	—
23	2.6	2.6
24	2.6	2.6
25	4.5	4.5
26	5.2	5.2
27	5.1	5.1
28	5.1	5.1
29	2.6	2.6
30	5.2	5.2
31	0	0
32	5.2	5.2
33	5.3	5.3
34	5.2	5.3
35	0	0
36	0	0
37	0	0
38	5.2	5.3
39	0	0
40	0	0
41	5.2	5.2
42	0	0
43	5.2	5.2
44	—	—
45	4.5	4.5
46	0.3	0.3
47	5.1	5.1
48	5.2	5.2
49	0.1	0
50	5.2	0
51	1.3	1.3
52	5.2	5.2
53	0	0
54	0	0
55	0	0
56	0	0
57	0.4	0.4
58	5.3	5.3
59	5.2	5.2
60	5.3	5.3
61	5.2	5.3
62	0	0
63	5.1	0
64	5.0	0
65	5.2	5.3
66	0	0
67	0	0

MODE PIN NO.	REC	PLAY
68	5.2	5.3
69	5.2	5.3
70	5.2	5.3
71	0	0
72	2.6	2.6
73	5.3	5.3
74	5.3	5.3
75	5.3	5.3
76	5.3	5.3
77	0	0
78	5.1	5.2
79	5.2	5.2
80	5.2	5.2
81	3.8	3.0
82	0	0
83	0	0
84	0	2.1
85	3.0	2.6
86	2.1	2.6
87	2.6	2.6
88	2.6	2.6
89	2.6	2.6
90	2.6	2.6
91	0	0
92	5.2	5.2
93	2.6	2.6
94	2.6	2.6
95	2.6	2.6
96	0	0
97	1.2	1.2
98	1.3	1.3
99	5.2	5.2
100	2.1	2.1
IC6002		
1	1.3	1.3
2	0	0
3	1.3	1.3
4	—	—
IC6003		
1	0	0
2	1.3	1.3
3	0	0
4	—	—
IC6004		
1	0	0
2	0	0
3	0	0
4	0	0
5	4.9	4.9
6	5.0	5.0
7	0	0
8	5.1	5.1
Q3001		

MODE PIN NO.	REC	PLAY
E	1.6	1.6
C	0	0
B	1.0	1.0
Q3002		
E	1.6	1.6
C	0	0
B	1.0	1.0
Q3007		
E	2.0	2.0
C	11.9	11.9
B	2.6	2.6
Q3302		
E	0	0
C	0.3	0.3
B	4.9	4.9
Q3310		
E	0	0
C	4.2	4.2
B	0	0
Q3311		
E	1.7	1.7
C	0	0
B	1.0	1.0
Q3314		
E1	1.5	1.5
C1	5.1	5.1
B1	2.1	2.1
E2	1.5	1.5
C2	1.7	1.7
B2	1.9	1.9
Q3315		
E	1.7	1.7
C	5.0	5.0
B	5.1	5.1
Q4001		
E	5.1	5.1
C	-18.2	5.1
B	5.1	4.4
Q4002		
E	-21.0	0
C	0	0
B	-14.1	0
Q4003		
E	-20.1	0
C	0	0
B	-14.0	0.8
Q4031		
E	0	0
C	5.2	5.2
B	5.9	5.9
Q4101		
E	0	0
C	11.3	0.5
B	0.2	0.5

MODE PIN NO.	REC	PLAY
Q4154		
E	0	0
C	2.4	2.4
B	0	0
Q4171		
E	0	0
C	0	0
B	0.2	0.2
Q5301		
E	2.7	2.7
C	9.2	9.2
B	3.4	3.4
Q5302		
E	6.3	6.3
C	9.2	9.2
B	6.9	6.9
Q5303		
E	0	0
C	0.1	0.1
B	0.7	0.7
Q5601		
E	4.6	4.6
C	9.2	9.2
B	4.0	4.0
Q5901		
E	9.2	9.2
C	11.9	11.9
B	9.8	9.8
Q6002		
E	12.1	12.1
C	12.1	0.5
B	11.2	12.1
Q6003		
E	1.1	0.4
C	11.2	12.1
B	5.0	0
Q6004		
E	5.3	5.3
C	5.1	5.1
B	4.0	4.0
Q6005		
E	0	0
C	0	0
B	0.8	0.8
Q6006		
E	5.1	5.1
C	5.1	5.1
B	0	0
Q6007		
E	0	0
C	5.1	5.1
B	0	0
Q6009		
E	0	0

MODE PIN NO.	REC	PLAY
C	5.1	5.1
B	—	—
Q6010		
E	0	0
C	5.1	5.1
B	—	—
Q6251		
E	10.9	10.9
C	14.2	14.2
B	11.4	11.4
Q6252		
E	14.2	14.2
C	11.4	11.4
B	14.1	14.1
Q6254		
E	0	0
C	14.1	14.1
B	6.5	6.5
Q6301		
E	0	0
C	5.2	5.2
B	5.2	5.2
Q6501		
E	23.3	23.3
C	5.7	5.7
B	22.6	22.6
Q6502		
E	0.5	0.5
C	22.1	22.1
B	5.2	5.2
Q6503		
E	0	0
C	0.5	0.5
B	0.5	0.5
Q6504		
E	72.7	72.7
C	86.5	86.5
B	0.7	0.7
Q6505		
E	22.8	22.8
C	22.8	22.8
B	22.1	22.1
Q6506		
E	0	0
C	0	0
B	0.6	0.6
Q6507		
E	5.2	5.2
C	5.1	5.1
B	4.5	4.5
Q6511		
E	22.6	22.6
C	22.6	22.6
B	21.9	21.9

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

TV MAIN CIRCUIT

MODE PIN NO. \	REC	PLAY
TP4503	7.6	7.6
TP4504	1.3	1.3
TP4591	7.6	7.6
TP4592	1.3	1.3
TP5301	0	0
TP5302	0	0
TP5303	2.7	2.7
TP5304	11.9	11.9
TP5305	2.7	2.7
TP5306	0	0
TP5307	—	—
TP5308	5.2	5.2
TP5309	3.4	2.3
TP5310	7.8	7.8
TP5311	5.1	5.1
TP5401	3.8	3.8
TP5402	1.9	1.9
TP5501	0.6	0.6
TP5502	0.6	0.6
TP5503	0	0
TP5504	0	0
TP5505	0	0
TP5506	5.7	5.7
TP6001	—	—
TP6002	—	—
TP6003	3.4	3.0
TP6004	5.1	5.1
TP6005	5.1	5.1
TP6007	0	0
TP6008	0	0
TP6009	5.2	5.2
TP6013	2.5	2.5
TP6014	0	0
TP6201	2.6	2.6
TP6202	2.2	2.2
TP6203	2.6	2.6
TP6204	1.2	1.2
TP6205	2.6	2.6
TP6206	3.0	0
TP6207	2.6	2.6
TP6208	2.5	2.5
TP6209	2.4	2.4
TP6210	0	2.1
TP6211	2.5	2.5
TP6251	10.9	10.9
TP6501	0.5	0.5
TP7001	4.3	4.3

MODE PIN NO. \	REC	PLAY
IC451		
1	10.4	10.4
2	3.8	3.8
3	5.1	5.1
4	0	0
5	0	0
6	0	0
7	5.1	5.1
8	24.5	24.5
9	1.9	1.9
10	1.3	1.3
11	0	0
12	11.8	11.8
13	24.9	24.9
Q431		
E	2.5	2.5
C	0	0
B	1.9	1.9
Q432		
E	2.5	2.5
C	0	0
B	1.9	1.9
Q433		
E	2.5	2.5
C	0	0
B	1.9	1.9
Q434		
E	2.5	2.5
C	0	0
B	1.9	1.9
Q501		
E	0	0
C	62.0	62.0
B	0.4	0.4
Q506		
E	2.6	2.6
C	0	0
B	2.6	2.6
Q507		
E	0	0
C	2.6	2.6
B	0	0
Q508		
E	0	0
C	2.6	2.6
B	0	0
Q551		
E	1.7	1.7
C	10.5	10.5
B	2.1	2.1
Q571		
E	1.7	1.7
C	10.5	10.5
B	2.1	2.1

POWER SUPPLY CIRCUIT

MODE PIN NO.	REC	PLAY
Q581		
E	115.2	115.2
C	0	0
B	114.8	114.8
TP501	114.9	114.9
TP502	0	0
TP503	114.9	114.9
TP551	-20.0	-20.0
TP552	-20.9	-20.9
TP556	208.1	208.1
TP558	27.7	27.7
TP559	18.0	18.0

MODE PIN NO.	REC	PLAY
IC1001		
1	1.7	17
2	0	0
3	164.9	164.9
4	14.9	14.9
5	0	0
IC1002		
1	22.1	22.1
2	21.1	21.1
3	164.9	164.9
4	3.5	3.5
Q1001		
S	0	0
D	23.3	23.3
G	3.5	3.5
Q1002		
S	0	0
D	23.2	23.2
G	7.3	7.3
Q1003		
E	6.2	6.2
C	21.1	21.1
B	6.8	6.8
Q1004		
E	0	0
C	0	0
B	0.7	0.7

SUB POWER CIRCUIT

MODE PIN NO. \ IC1101	REC	PLAY
1	1.5	1.5
2	0	0
3	1.2	1.2
4	1.2	1.2
5	1.5	1.5
6	1.7	1.7
7	5.8	5.8
8	0	0
9	13.4	13.4
10	10.1	10.1
11	1.7	1.7
12	1.4	1.4
13	1.2	1.2
14	13.4	13.4
15	0	0
16	2.4	2.4
Q1101		
E	0	0
C	21.8	21.8
B	0.5	0.5
Q1102		
E	0	0
C	0.5	0.5
B	0.6	0.6
Q1103		
E	23.3	23.3
C	11.6	11.6
B	1.9	1.9
Q1104		
E	0	0
C	0	0
B	0	0
Q1105		
E	0	0
C	0	0
B	0.7	0.7
Q1106		
E1	2.1	2.1
C1	0	0
B1	0	0
E2	0	0
C2	0	0
B2	0.6	0.6
Q1107		
E	0	0
C	3.3	3.3
B	-1.9	-1.9
Q1108		
E	0	0
C	3.3	3.3
B	0	0

HEAD AMP CIRCUIT

[illegible]

HEAD AMP CIRCUIT CAPSTAN STATOR
CIRCUIT

MODE PIN NO.	REC	PLAY
IC2601		
1	13.0	13.0
2	13.0	13.0
3	13.5	13.5
4	1.2	1.2
5	5.1	5.1
6	0.9	0.9
7	1.0	1.0
8	0.7	0.7
9	2.6	2.6
10	1.5	1.5
11	0	0
12	3.9	3.9
13	3.9	3.9
14	3.9	3.9
15	0.1	0.1
16	13.2	13.2
IC3501		
1	2.6	2.6
2	0	4.2
3	0.3	1.4
4	0	0.7
5	0	0
6	0	0.7
7	0.2	1.4
8	0	0
9	0	0
10	0.2	0.2
11	0	0
12	0	0
13	---	---
14	0.2	0.2
15	---	---
16	6.3	0
17	6.3	0
18	6.3	0
19	---	---
20	---	---
21	---	---
22	0	0
23	0	0
24	0	0
25	11.9	0.5
26	0	0
27	0	0
28	0	0
29	0	0
30	2.7	2.3
31	5.1	0.1
32	0	0
33	0	0
34	0	0
35	12.0	12.0
36	0.1	5.0

CAPSTAN STATOR CRT CIRCUIT

MODE PIN NO.	REC	PLAY
IC2501		
1	13.0	13.0
2	13.0	13.0
3	13.5	13.5
4	1.2	1.2
5	1.2	1.2
6	1.2	1.2
7	0.1	2.7
8	0	0
9	2.6	2.6
10	1.5	1.5
11	2.6	2.6
12	0.5	0.5
13	3.9	3.9
14	3.9	3.9
15	0	0
16	0	0
17	---	---
18	13.5	13.5
19	2.8	2.8
20	0	0.7
21	2.8	2.8
22	0	0.7
23	0.2	1.4
24	0	0
25	0	0
26	13.5	13.5
27	---	---
28	5.1	5.1

MODE PIN NO.	REC	PLAY
Q351		
E	3.9	3.9
C	78.4	78.4
B	4.4	4.4
Q352		
E	2.0	2.0
C	130.2	130.2
B	2.5	2.5
Q353		
E	2.0	2.0
C	129.6	129.6
B	2.5	2.5
Q354		
E	5.5	5.5
C	11.9	11.9
B	5.9	5.9
TP47	5.5	5.5
TP49	2.5	2.5
TP50	129.4	129.4

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

SYSTEM CONTROL/SERVO

MODE PIN NO.	STOP	FF	REW
IC2501			
1	13.0	13.0	13.0
2	13.0	13.0	13.0
3	13.5	13.5	13.5
4	1.2	1.2	1.2
5	1.2	1.2	1.2
6	1.2	1.2	1.2
7	0.1	0.1	0.1
8	0	0	0
9	2.6	2.6	2.6
10	1.5	1.5	1.5
11	2.6	2.6	2.6
12	0.5	0.5	0.5
13	3.9	3.9	3.9
14	3.9	3.9	3.9
15	0	0	0
16	0	0	0
17	---	---	---
18	13.5	13.5	13.5
19	2.8	2.8	2.8
20	0	0	0
21	2.8	2.8	2.8
22	0	0	0
23	0.2	0.2	0.2
24	1.8	0	0
25	1.8	0	0
26	13.5	13.5	13.5
27	---	---	---
28	5.1	5.1	5.1
IC2601			
1	13.0	13.0	13.0
2	13.0	13.0	13.0
3	13.5	13.5	13.5
4	1.2	1.2	1.2
5	5.1	5.1	5.1
6	0.9	0.9	0.9
7	1.0	1.0	1.0
8	0.7	0.7	0.7
9	2.6	2.6	2.6
10	1.5	1.5	1.5
11	0	0	0
12	3.9	3.9	3.9
13	3.9	3.9	3.9
14	3.9	3.9	3.9
15	0.1	0.1	0.1
16	13.2	13.2	13.2
IC6001			
1	0	0	0
2	0	0	0
3	0	0	0
4	2.6	2.4	2.4
5	2.6	2.4	2.4
6	0	0	0
7	0	0	0

MODE PIN NO.	STOP	FF	REW
8	5.0	0	0
9	4.1	2.5	2.5
10	2.6	2.3	2.4
11	5.0	5.1	2.4
12	4.0	3.9	4.1
13	5.2	5.2	5.2
14	5.2	5.2	5.2
15	0	0	0
16	5.1	5.2	0
17	0	0	0
18	---	---	---
19	---	---	---
20	5.2	5.2	5.2
21	0	0	0
22	0	0	0
23	5.2	2.6	2.6
24	5.2	2.6	2.6
25	4.8	4.5	4.5
26	5.2	5.2	5.2
27	0	5.1	5.1
28	5.1	5.1	5.1
29	5.2	2.6	2.6
30	5.2	5.2	5.2
31	0	0	0
32	-0.5	5.2	5.2
33	5.3	5.3	5.3
34	5.2	5.2	5.2
35	0	0	0
36	0	0	0
37	0	0	0
38	0	5.3	5.3
39	5.2	5.2	5.2
40	0	0	0
41	5.2	5.2	5.2
42	0	0	0
43	5.2	5.2	5.2
44	0	0	0
45	4.9	4.4	4.4
46	0.2	5.2	0.1
47	5.6	5.1	5.1
48	5.2	5.2	5.2
49	0	0	0
50	5.2	0	5.2
51	1.3	2.6	2.6
52	5.2	5.2	5.2
53	2.6	0	5.2
54	0	0	0
55	0	0	0
56	0	0	0.1
57	0	0.4	0.4
58	0	5.3	5.3
59	5.2	5.2	5.2
60	0	5.3	5.3
61	5.2	5.2	5.2

MODE PIN NO.	STOP	FF	REW
62	0	0	0
63	5.1	5.1	5.1
64	4.9	5.0	5.0
65	5.2	5.2	5.3
66	0	0	0
67	0	0	0
68	5.2	5.2	5.2
69	5.2	5.2	5.2
70	5.2	5.2	0
71	0	0	0
72	2.5	2.5	2.5
73	5.3	5.3	5.3
74	5.3	5.3	5.3
75	5.3	5.3	5.3
76	5.3	0	5.3
77	0	0	0
78	5.1	3.2	3.2
79	5.2	5.2	5.2
80	5.2	5.2	5.2
81	3.8	3.8	3.8
82	0	0	0
83	0	0	0
84	2.5	2.3	2.3
85	2.7	2.6	2.6
86	2.7	2.6	2.6
87	2.7	2.6	2.6
88	2.7	2.6	2.6
89	2.7	2.6	2.6
90	2.7	2.6	2.6
91	0	0	0
92	5.3	5.2	5.2
93	2.7	---	---
94	2.7	2.6	2.6
95	2.7	2.6	2.6
96	0	0	0
97	5.2	1.2	1.1
98	5.1	3.1	3.2
99	0.2	2.5	2.5
100	2.1	2.1	2.1
IC6002			
1	1.2	1.2	1.2
2	0	0	0
3	1.2	1.2	1.2
4	---	---	---
IC6003			
1	2.4	2.4	2.4
2	1.2	1.2	1.2
3	0	0	0
4	---	---	---
Q6002			
E	12.5	12.1	12.1
C	0.5	1.0	1.0
B	12.1	12.1	12.1

MODE PIN NO.	STOP	FF	REW
Q6003			
E	0	0	0
C	12.1	12.1	12.1
B	0	0	0
Q6004			
E	5.3	5.3	5.3
C	0	0	0
B	5.1	5.1	5.1
Q6005			
E	5.1	5.1	5.1
C	5.1	5.1	5.1
B	4.4	4.4	4.4
Q6006			
E	0	0	0
C	0	0	0
B	0.8	0.8	0.8
Q6007			
E	0	0	0
C	5.2	5.2	5.2
B	0	0	0
Q6009			
E	0	0	0
C	5.1	5.1	5.1
B	---	---	---
Q6010			
E	0	0	0
C	5.1	5.1	5.1
B	---	---	---
TP6001	---	---	---
TP6002	---	---	---
TP6003	3.8	3.8	3.8
TP6004	5.1	5.1	5.1
TP6005	5.1	5.1	5.1
TP6007	0	0	0
TP6008	0	0	0
TP6009	5.2	5.2	5.2
TP6014	0	0	0
TP6201	2.6	2.2	2.2
TP6202	4.5	2.4	2.4
TP6203	2.5	2.5	2.5
TP6204	1.0	1.0	1.0
TP6205	2.6	2.6	2.6
TP6206	2.5	2.5	2.5
TP6207	2.5	2.5	2.5
TP6208	4.4	2.6	2.6
TP6209	4.9	0	0
TP6210	2.3	1.9	1.9
TP6211	2.5	2.5	2.5


9 CIRCUIT BOARD LAYOUT

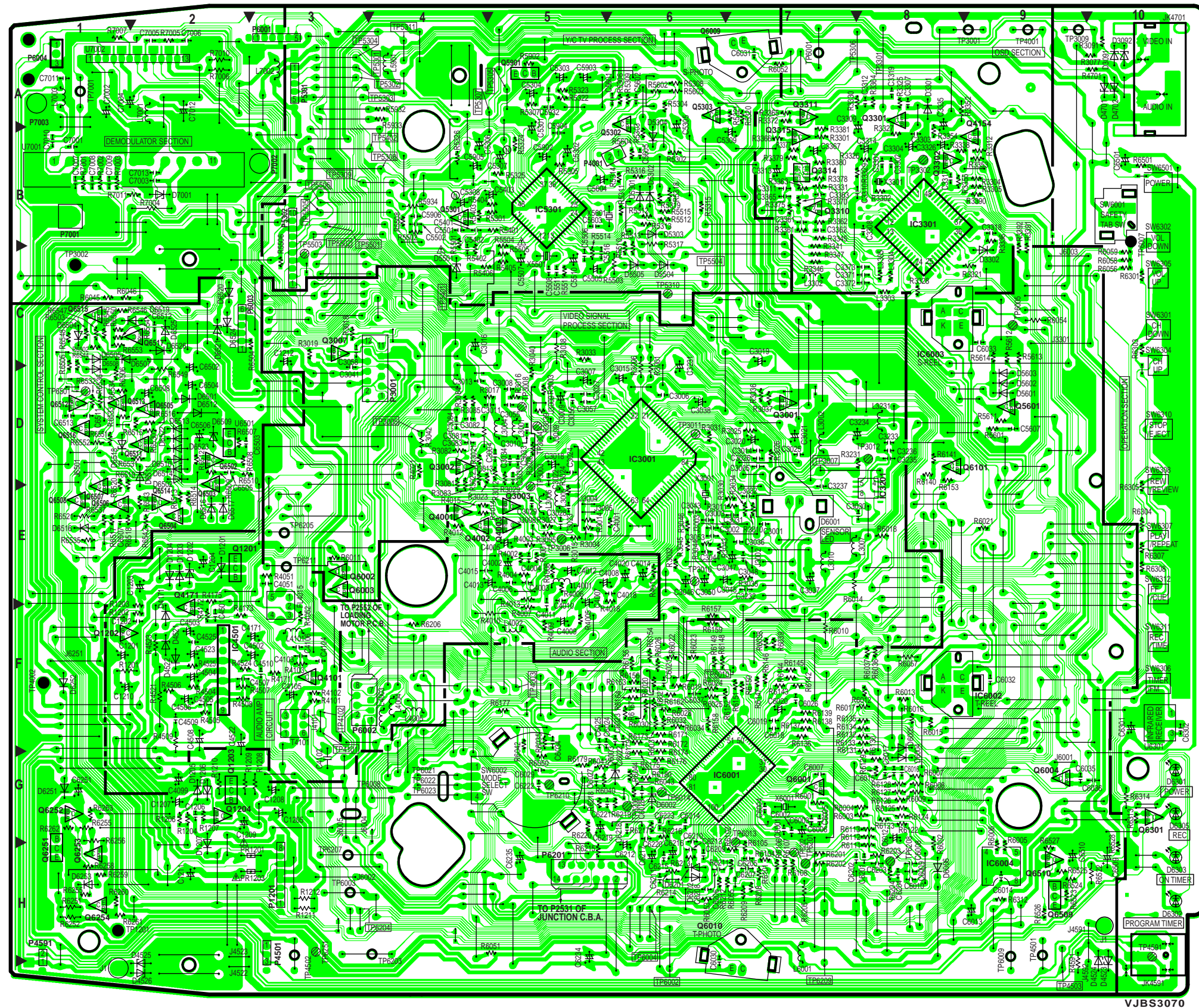
9.1. MAIN C.B.A. VEPS3070A

(SIGNAL PROCESS/OSD/AUDIO/TV Y/C PROCESS/SYSTEM CONTROL/SERVO/OPERATION)

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.



NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

MAIN	
TARNSISTOR	
Q1201	E-2
Q1202	F-1
Q1203	G-2
Q1204	G-2
Q3001	D-7
Q3002	D-4
Q3003	E-5
Q3007	C-3
Q3301	A-8
Q3302	B-8
Q3310	B-7
Q3311	A-7
Q3314	B-7
Q3315	B-7
Q4001	E-4
Q4002	E-4
Q4003	E-5
Q4101	F-3
Q4154	A-9
Q4171	E-2
Q5301	B-4
Q5302	B-5
Q5303	A-6
Q5601	D-9
Q5901	A-5
Q6001	G-7
Q6002	E-3
Q6003	E-3
Q6004	G-9
Q6009	A-6
Q6010	H-6
Q6101	D-9
Q6251	H-1
Q6252	G-1
Q6253	H-1
Q6254	H-1
Q6301	G-10
Q6502	D-2
Q6503	E-2
Q6504	E-2
Q6505	D-2
Q6506	E-1
Q6507	E-1
Q6508	E-1
Q6509	H-9
Q6510	H-9
Q6511	D-1
Q6512	D-1
Q6513	D-2
Q6514	E-2
Q6515	C-1
Q6516	D-1
Q6517	C-2

MAIN	
IC	
IC3001	D-6
IC3201	E-8
IC3301	B-8
IC4501	F-2
IC5301	B-5
IC6001	G-6
IC6002	F-9
IC6003	C-8
IC6004	H-9

MAIN	
CONNECTOR	
P1201	H-3
P3001	D-4
P4001	B-5
P4501	H-3
P4591	H-1
P5301	A-3
P5302	B-3
P6001	A-3
P6002	F-3
P6003	C-3
P6004	A-1
P6201	H-5
P7001	B-1
P7002	B-3
P7003	A-1

MAIN	
TEST POINT	
TP1201	H-1
TP3001	A-8
TP3002	C-1
TP3003	D-5
TP3004	D-5
TP3005	D-4
TP3006	E-5
TP3007	D-7
TP3008	D-5
TP3009	A-9
TP3010	E-6
TP3011	D-6
TP3012	D-8
TP3301	A-8
TP3302	B-8
TP4001	A-9
TP4002	F-1
TP4003	F-5
TP4101	F-3
TP4102	F-3
TP4501	H-9
TP4502	H-3
TP4503	H-9
TP4591	H-10
TP5301	A-4
TP5302	A-4
TP5303	A-4
TP5304	A-3
TP5305	A-5
TP5306	A-7
TP5307	A-4
TP5308	B-4
TP5309	B-3
TP5310	C-6
TP5311	A-4
TP5401	C-4
TP5402	B-4
TP5501	B-3
TP5502	B-3
TP5503	B-3
TP5504	C-6
TP5505	B-3
TP5506	B-3
TP6001	A-7
TP6002	H-6
TP6003	H-3
TP6004	H-6
TP6005	C-9
TP6007	C-10
TP6008	G-3

MAIN	
TEST POINT	
TP6009	H-9
TP6010	F-6
TP6013	G-7
TP6014	G-6
TP6021	G-4
TP6022	G-4
TP6023	G-4
TP6201	H-7
TP6202	H-7
TP6203	H-4
TP6204	H-4
TP6205	E-3
TP6206	G-6
TP6207	H-3
TP6208	H-8
TP6209	H-7
TP6210	G-5
TP6211	E-3
TP6251	H-3
TP6501	D-1
TP7001	A-1


LEADLESS COMPONENT PARTS LOCATION GUIDE

MAIN C.B.A.

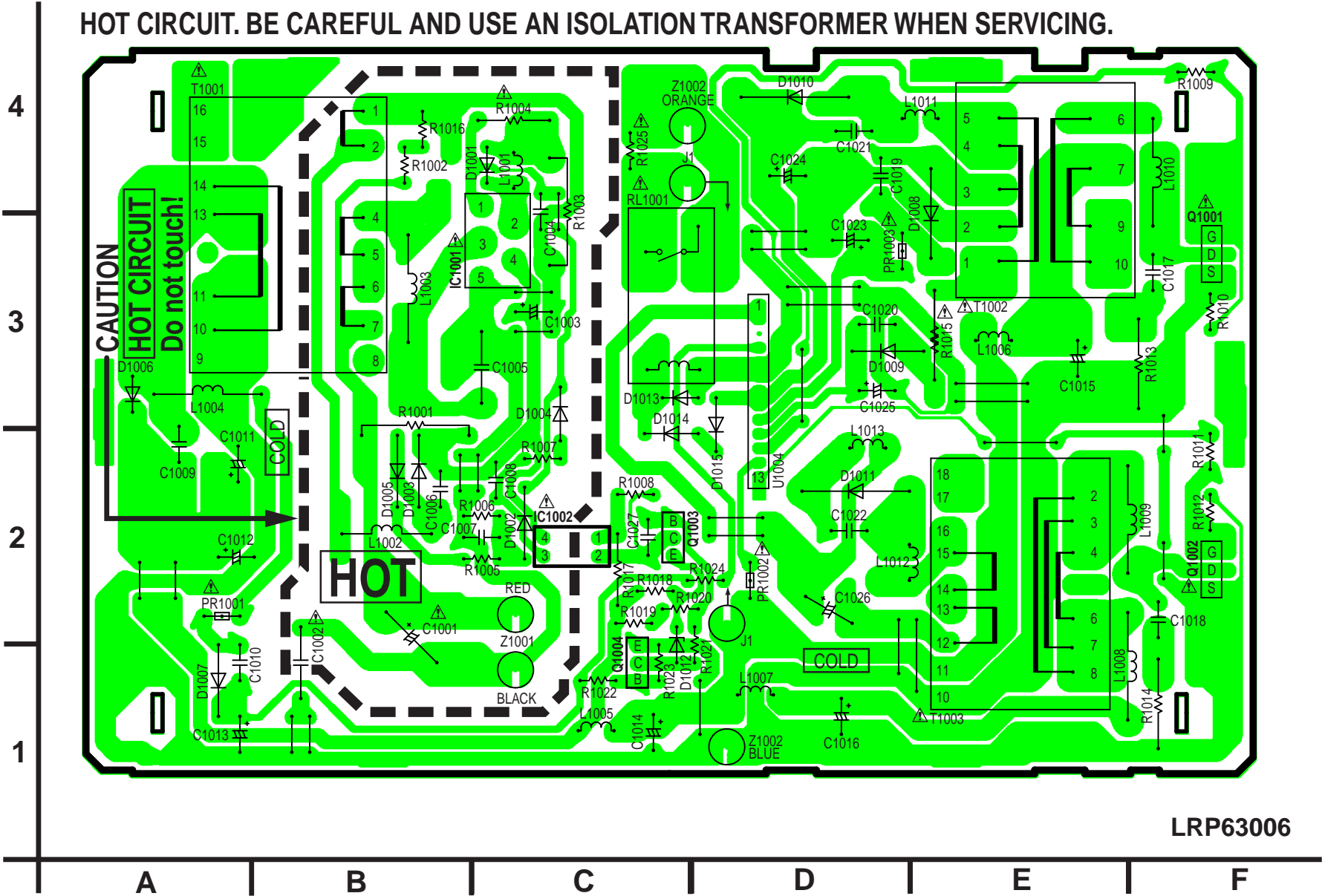
C1202	F-1	C4505	F-2	C6512	C-2	R3338	B-8	R5322	A-5	R6052	A-7	R6215	H-5
C1206	G-2	C4507	F-3	C6513	D-1	R3341	B-7	R5323	A-5	R6053	H-6	R6216	G-6
C3001	E-7	C4509	F-2	C7001	B-1	R3345	B-7	R5324	B-5	R6055	H-7	R6217	G-6
C3002	E-6	C4510	F-3	C7003	B-2	R3346	C-7	R5325	B-5	R6056	C-10	R6218	G-5
C3003	E-6	C4525	F-2	C7005	A-2	R3347	C-7	R5326	B-4	R6058	C-10	R6219	G-6
C3004	D-5	C5401	B-4	C7006	A-2	R3353	B-9	R5401	B-5	R6059	C-10	R6220	G-5
C3005	D-7	C5402	B-4	C7007	B-1	R3354	B-8	R5402	C-4	R6101	H-7	R6255	G-1
C3006	D-6	C5501	B-4	C7008	B-1	R3355	B-9	R5403	B-4	R6102	G-7	R6258	H-1
C3008	D-5	C5502	B-4	C7009	B-1	R3361	B-7	R5404	B-4	R6104	H-7	R6259	H-1
C3010	D-5	C5506	B-5	C7010	B-1	R3362	B-7	R5405	C-5	R6105	H-7	R6260	H-1
C3011	D-4	C5508	C-5	C7011	A-1	R3363	B-7	R5406	C-4	R6106	H-7	R6261	H-1
C3013	D-4	C5511	C-5	C7013	B-2	R3364	A-8	R5501	C-4	R6107	H-7	R6262	G-1
C3014	D-7	C5516	C-5	L3303	C-8	R3365	A-7	R5502	B-4	R6108	H-7	R6263	G-1
C3022	E-5	C5601	A-6	L3304	C-8	R3366	B-7	R5504	B-5	R6111	H-7	R6301	C-1
C3023	E-5	C5602	A-6	L3305	C-8	R3370	B-7	R5505	C-5	R6112	G-7	R6303	C-10
C3024	D-5	C5603	B-5	R1202	F-1	R3372	A-7	R5506	C-3	R6113	G-7	R6304	E-10
C3025	D-7	C5605	B-6	R1203	F-1	R3375	B-7	R5510	C-6	R6122	G-8	R6305	E-10
C3026	D-7	C5607	D-9	R1204	G-2	R3377	B-7	R5511	C-5	R6123	G-8	R6307	E-10
C3027	D-5	C5904	A-5	R1206	G-2	R3378	B-7	R5512	B-6	R6124	G-8	R6308	E-10
C3028	E-5	C5906	B-6	R1207	G-2	R3379	B-7	R5513	B-6	R6125	G-8	R6312	H-9
C3029	E-5	C5932	A-5	R3003	D-5	R3380	B-7	R5514	B-5	R6126	G-8	R6313	G-10
C3030	E-7	C6001	G-7	R3004	E-5	R3381	B-7	R5515	B-6	R6127	G-8	R6501	B-10
C3031	E-7	C6002	G-7	R3005	E-5	R3390	B-9	R5601	D-9	R6128	G-8	R6502	C-1
C3032	E-7	C6004	G-7	R3010	E-7	R3391	B-9	R5602	A-6	R6129	G-8	R6503	C-1
C3033	D-5	C6005	G-7	R3011	E-6	R3392	B-9	R5603	A-6	R6130	G-8	R6504	D-3
C3034	D-5	C6006	G-7	R3012	E-5	R4001	E-5	R5604	B-4	R6131	F-7	R6505	D-1
C3035	D-5	C6007	G-7	R3014	E-5	R4002	E-5	R5611	D-9	R6132	F-7	R6506	D-1
C3036	E-7	C6008	H-8	R3015	E-5	R4003	E-5	R5612	C-9	R6133	F-7	R6507	E-1
C3041	D-3	C6009	H-8	R3016	D-5	R4004	E-5	R5613	C-9	R6134	F-7	R6508	D-3
C3043	E-6	C6010	H-8	R3017	D-4	R4005	F-5	R5614	C-9	R6135	F-7	R6509	E-2
C3044	E-6	C6014	H-9	R3018	C-3	R4006	E-5	R5902	A-5	R6136	F-7	R6510	D-2
C3048	E-7	C6015	G-8	R3019	C-3	R4007	F-5	R5932	A-4	R6137	F-7	R6512	D-2
C3053	E-6	C6016	G-8	R3021	D-4	R4008	E-5	R5933	A-4	R6138	F-7	R6513	E-2
C3055	D-5	C6017	G-8	R3022	E-4	R4009	F-5	R6001	G-7	R6139	F-7	R6514	E-2
C3056	D-5	C6018	F-7	R3023	E-4	R4011	E-6	R6002	H-8	R6140	D-8	R6515	D-1
C3057	D-5	C6019	F-7	R3024	D-5	R4012	E-4	R6003	G-7	R6141	D-8	R6516	D-2
C3058	C-3	C6021	F-6	R3025	D-6	R4013	E-5	R6004	G-7	R6142	F-7	R6517	E-1
C3081	D-4	C6022	G-6	R3026	D-7	R4014	E-5	R6005	G-9	R6143	F-7	R6518	E-1
C3082	D-4	C6023	F-6	R3027	E-5	R4015	E-4	R6006	G-9	R6144	F-7	R6519	D-1
C3083	D-4	C6024	F-6	R3028	D-5	R4018	F-5	R6007	G-8	R6145	F-7	R6520	E-1
C3084	D-4	C6025	F-5	R3029	E-5	R4021	D-4	R6008	G-8	R6146	F-7	R6523	H-9
C3232	E-7	C6026	F-7	R3030	E-6	R4051	E-3	R6009	G-8	R6147	F-7	R6524	H-9
C3233	D-8	C6027	G-5	R3031	D-6	R4052	F-3	R6011	E-3	R6148	F-6	R6525	H-9
C3235	D-8	C6028	G-6	R3032	E-6	R4101	F-3	R6012	F-7	R6149	F-6	R6526	H-9
C3236	D-8	C6029	G-5	R3033	C-5	R4102	F-3	R6013	F-8	R6150	F-7	R6527	G-9
C3237	E-7	C6030	H-6	R3034	E-7	R4103	F-3	R6015	F-8	R6151	F-7	R6528	H-10
C3301	B-8	C6031	A-7	R3035	E-7	R4171	F-3	R6016	F-8	R6152	F-7	R6530	D-2
C3302	B-8	C6032	F-9	R3036	D-7	R4172	F-2	R6017	F-7	R6153	E-8	R6531	D-1
C3303	B-8	C6033	C-9	R3037	D-7	R4173	F-2	R6018	E-8	R6154	F-6	R6532	D-1
C3307	A-8	C6034	G-5	R3039	D-5	R4175	E-2	R6019	F-6	R6156	F-6	R6533	D-1
C3308	B-8	C6035	G-9	R3040	C-5	R4504	F-2	R6020	F-6	R6157	F-6	R6534	D-1
C3310	B-8	C6036	G-9	R3043	E-6	R4505	F-2	R6021	E-9	R6158	F-6	R6535	E-1
C3311	B-7	C6037	F-6	R3044	E-6	R4506	F-2	R6022	F-6	R6159	F-6	R6536	D-1
C3312	A-8	C6201	H-8	R3045	E-6	R4507	F-3	R6023	F-6	R6162	F-6	R6537	E-1
C3317	B-8	C6202	H-7	R3046	E-6	R4508	F-2	R6024	F-6	R6163	F-6	R6542	E-2
C3318	B-9	C6203	H-8	R3077	A-10	R4524	F-2	R6025	F-6	R6164	F-6	R6543	E-2
C3319	A-8	C6204	H-8	R3081	D-4	R4525	F-2	R6026	F-6	R6167	F-6	R6544	C-1
C3361	B-7	C6205	H-7	R3082	D-4	R4701	A-10	R6027	F-6	R6171	F-6	R6545	C-1
C3362	B-7	C6206	H-6	R3083	E-4	R5301	B-5	R6028	F-6	R6172	F-6	R6546	C-2
C3363	B-7	C6207	H-7	R3084	D-4	R5302	B-6	R6030	F-6	R6173	F-6	R6547	C-1
C3365	B-7	C6208	H-6	R3085	D-4	R5303	B-6	R6031	G-6	R6174	G-6	R6548	C-1
C3371	C-7	C6209	H-6	R3091	A-10	R5304	A-6	R6032	F-6	R6175	G-6	R6550	C-1
C3372	C-7	C6210	G-6	R3231	D-7	R5305	B-5	R6034	F-6	R6176	G-6	R6551	D-1
C3373	C-7	C6211	H-6	R3301	B-7	R5306	A-6	R6035	F-5	R6177	F-5	R6552	D-1
C4001	E-6	C6213	G-6	R3302	B-8	R5307	A-5	R6036	F-8	R6179	G-6	R6553	C-1
C4003	E-5	C6214	G-6	R3304	B-9	R5308	A-6	R6037	F-8	R6180	G-6	R6554	C-2
C4004	E-5	C6215	H-6	R3305	B-9	R5309	A-6	R6038	F-7	R6201	H-7	R7001	B-1
C4006	E-5	C6218	G-6	R3312	B-9	R5311	B-6	R6039	F-7	R6202	H-7	R7002	B-1
C4010	F-5	C6220	H-6	R3321	C-9	R5312	B-6	R6040	G-5	R6203	H-8	R7003	B-1
C4011	F-5	C6221	G-5	R3325	A-8	R5313	B-6	R6041	G-5	R6204	H-8	R7005	A-2
C4015	E-4	C6222	G-5	R3326	B-7	R5314	B-6	R6042	G-5	R6206	F-4	R7007	A-1
C4018	E-6	C6223	G-6	R3327	B-8	R5315	B-6	R6043	G-6	R6208	H-7	R7011	B-1
C4051	E-3	C6302	F-10	R3328	C-8	R5316	B-6	R6044	G-6	R6209	H-7		
C4103	F-3	C6503	D-3	R3329	B-8	R5318	B-6	R6045	C-1	R6211	H-6		
C4104	F-3	C6505	E-2	R3330	A-7	R5319	B-6	R6046	C-1	R6212	H-6		
C4106	F-3	C6507	E-1	R3331	B-7	R5320	A-7	R6050	G-5	R6213	H-6		
C4501	F-2	C6511	D-1	R3336	C-9	R5321	A-7	R6051	H-4	R6214	H-6		

9.2. POWER SUPPLY C.B.A. LRM63006A

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.

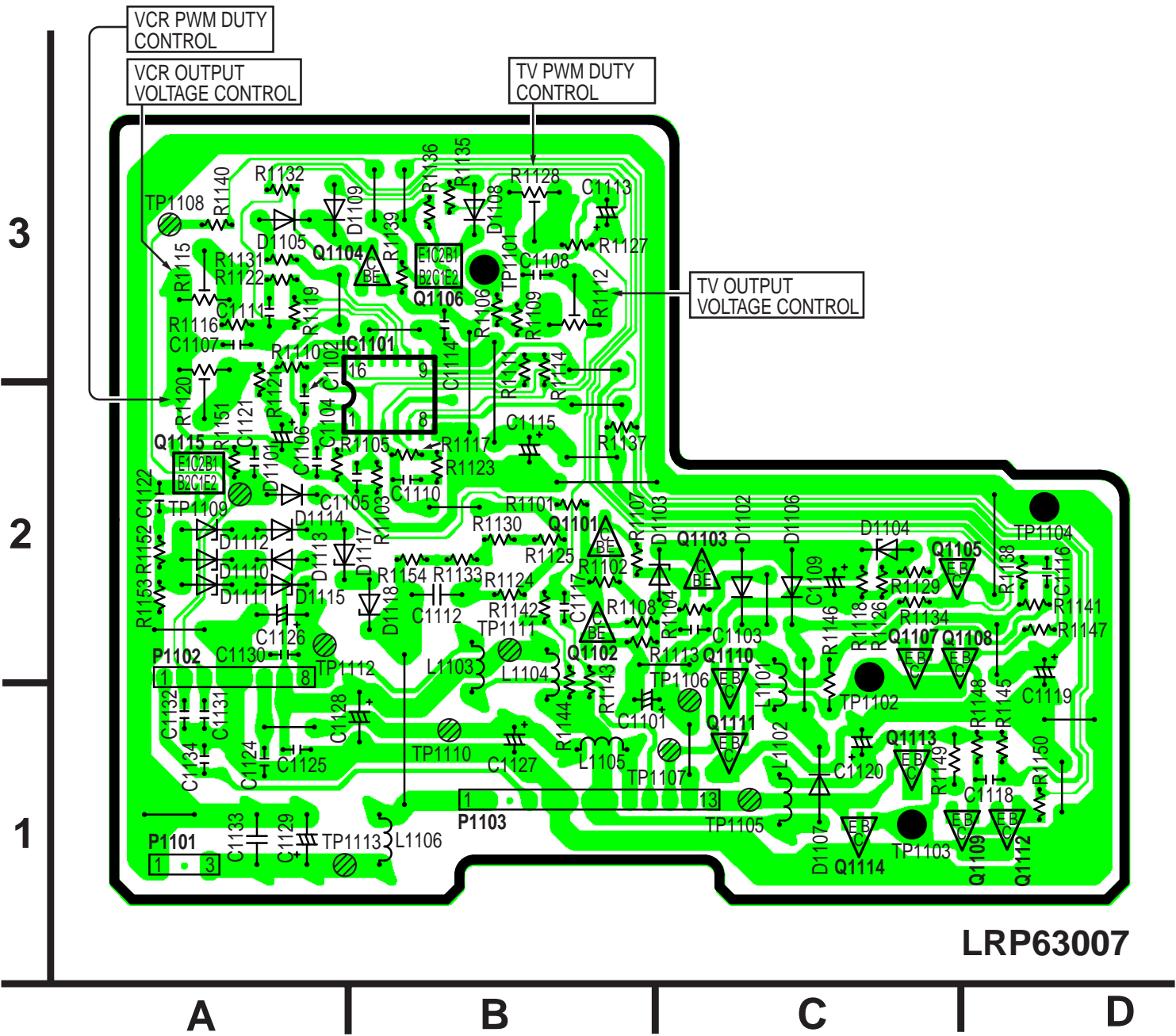


POWER SUPPLY	
TRANSISTOR	
Q1001	F-3
Q1002	F-2
Q1003	D-2
Q1004	C-1
IC	
IC1001	B-3
IC1002	C-2

9.3. SUB POWER C.B.A. LRP63007A

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.



SUB POWER	
IC	
IC1101	B-3
TRANSISTOR	
Q1101	B-2
Q1102	B-2
Q1103	C-2
Q1104	A-3
Q1105	C-2
Q1106	B-3
Q1107	C-2
Q1108	C-2
Q1109	D-1
Q1110	C-2
Q1111	C-1
Q1112	D-1
Q1113	C-1
Q1114	C-1
Q1115	A-2

SUB POWER	
CONNECTOR	
P1101	A-1
P1102	A-2
P1103	B-1

SUB POWER	
TEST POINT	
TP1101	B-3
TP1102	C-1
TP1103	C-1
TP1104	D-2
TP1105	C-1
TP1106	C-2
TP1107	B-1
TP1108	A-3
TP1109	A-2
TP1110	B-1
TP1111	B-2
TP1112	A-2
TP1113	A-1

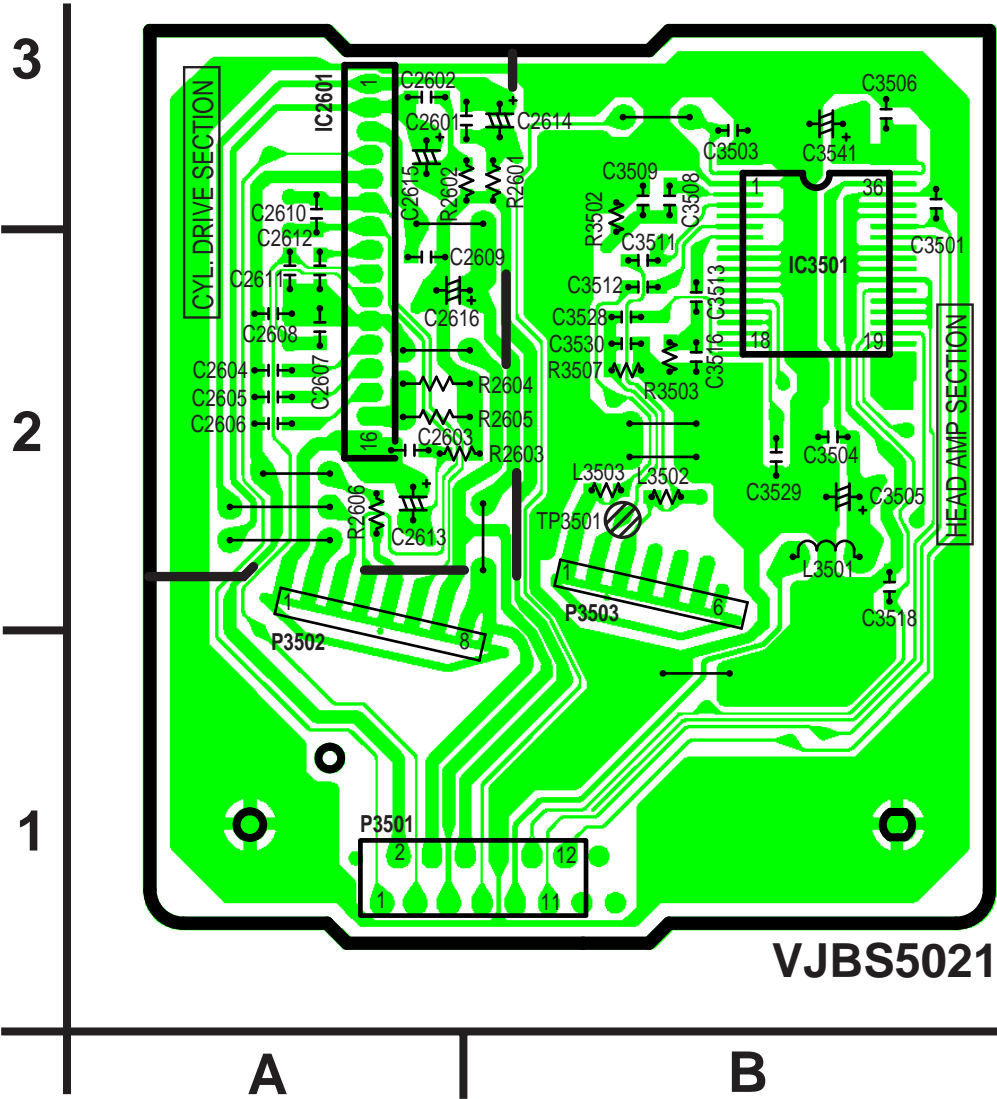
LEADLESS COMPONENT PARTS LOCATION GUIDE
SUB POWER C.B.A.

C1102	A-2	C1131	A-1	R1117	B-2	R1136	B-3
C1103	C-2	C1132	A-1	R1118	C-2	R1137	B-2
C1104	A-2	C1134	A-1	R1119	A-3	R1138	D-2
C1105	A-2	R1101	B-2	R1121	A-2	R1139	B-3
C1107	A-3	R1102	B-2	R1122	A-3	R1140	A-3
C1108	B-3	R1103	B-2	R1123	B-2	R1141	D-2
C1110	B-2	R1104	C-2	R1124	B-2	R1142	B-2
C1111	A-3	R1105	B-2	R1125	B-2	R1143	B-1
C1114	B-2	R1106	B-3	R1126	C-2	R1144	B-1
C1116	D-2	R1107	B-2	R1127	B-3	R1145	D-1
C1117	B-2	R1108	B-2	R1129	C-2	R1147	D-2
C1118	D-1	R1109	B-3	R1130	B-2	R1148	D-1
C1121	A-2	R1110	A-3	R1131	A-3	R1150	D-1
C1122	A-2	R1111	B-2	R1132	A-3	R1151	A-2
C1124	A-1	R1113	C-2	R1133	B-2	R1152	A-2
C1125	A-1	R1114	B-2	R1134	C-2	R1153	A-2
C1130	A-2	R1116	A-3	R1135	B-3	R1154	B-2

9.4. HEAD AMP C.B.A. VEPS5021Z

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.



HEAD AMP	
IC	
IC2601	A-3
IC3501	B-2
CONNECTOR	
P3501	A-1
P3502	A-1
P3503	B-2
TEST POINT	
TP3501	B-2

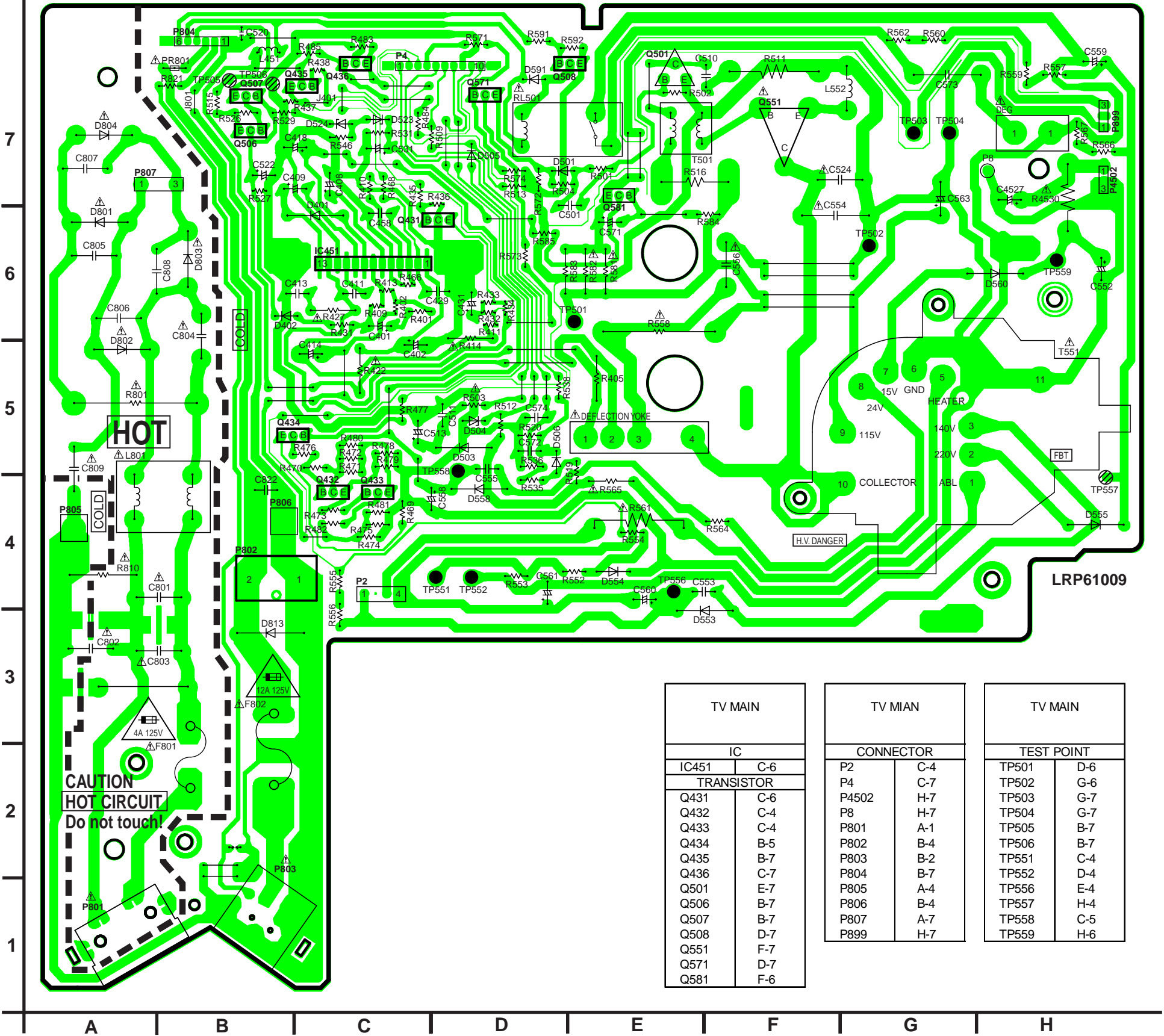
LEADLESS COMPONENT PARTS LOCATION GUIDE
HEAD AMP C.B.A.

R2601	B-3	C2603	A-2	C2612	A-2	C3513	B-2
R2602	A-3	C2604	A-2	C3501	B-2	C3516	B-2
R2603	B-2	C2605	A-2	C3503	B-3	C3518	B-2
R2606	A-2	C2606	A-2	C3504	B-2	C3528	B-2
R3502	B-2	C2607	A-2	C3506	B-3	C3529	B-2
R3503	B-2	C2608	A-2	C3508	B-3	C3530	B-2
R3507	B-2	C2609	A-2	C3509	B-3	L3502	B-2
C2601	A-3	C2610	A-3	C3511	B-2	L3503	B-2
C2602	A-3	C2611	A-2	C3512	B-2		

9.5. TV MAIN C.B.A. LRP61009A

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.

HOT CIRCUIT. BE CAREFUL AND USE AN ISOLATION TRANSFORMER WHEN SERVICING.



NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLASE ONLY WITH THE SAME TYPE 4A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D' INCENDIE N' UTILISERQUE DES FUSIBLE DE MÊME
TYPE 4A 125V

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLASE ONLY WITH THE SAME TYPE 12A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D' INCENDIE N' UTILISERQUE DES FUSIBLE DE MÊME
TYPE 12A 125V

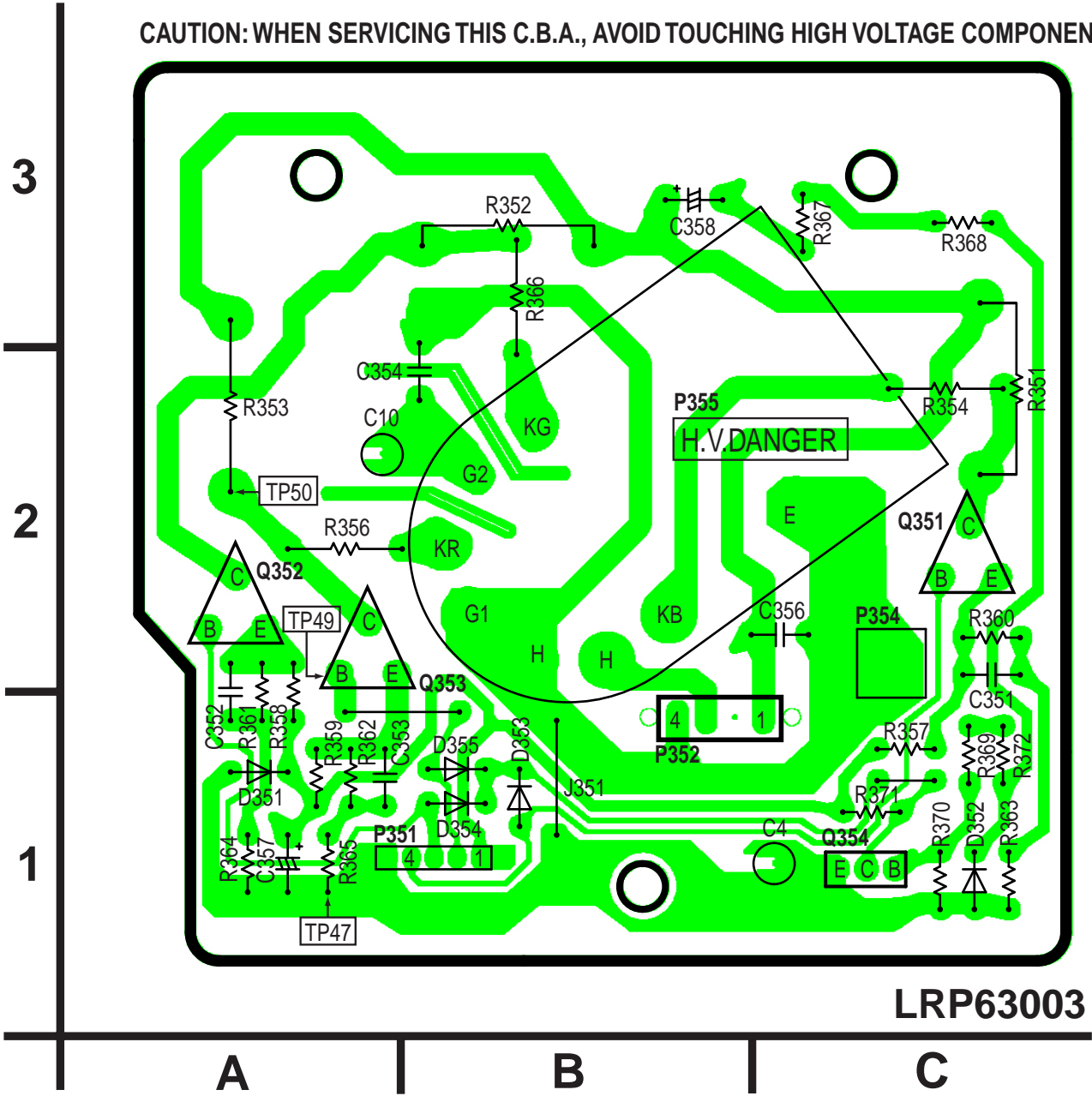
TV MAIN		TV MIAN		TV MAIN	
IC		CONNECTOR		TEST POINT	
IC451	C-6	P2	C-4	TP501	D-6
TRANSISTOR		P4	C-7	TP502	G-6
Q431	C-6	P4502	H-7	TP503	G-7
Q432	C-4	P8	H-7	TP504	G-7
Q433	C-4	P801	A-1	TP505	B-7
Q434	B-5	P802	B-4	TP506	B-7
Q435	B-7	P803	B-2	TP551	C-4
Q436	C-7	P804	B-7	TP552	D-4
Q501	E-7	P805	A-4	TP556	E-4
Q506	B-7	P806	B-4	TP557	H-4
Q507	B-7	P807	A-7	TP558	C-5
Q508	D-7	P899	H-7	TP559	H-6
Q551	F-7				
Q571	D-7				
Q581	F-6				

LEADLESS COMPONENT PARTS
LOCATION GUIDE
TV MAIN C.B.A.

C520	B-7	R434	D-6
R402	C-6	R436	D-7
R409	C-6	R437	C-7
R411	D-6	R438	C-7
R413	C-6	R466	C-6
R432	D-6	R527	B-7
R433	D-6		

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.



CRT	
TRANSISTOR	
Q351	C-2
Q352	A-2
Q353	B-2
Q354	C-1
CONNECTOR	
P351	A-1
P352	B-1
P354	C-2
P355	B-2
TEST POINT	
TP47	A-1
TP49	A-2
TP50	A-2

NOTE:

1. CAPSTAN STATOR UNIT IS SUPPLIED AS A CAPSTAN STATOR KIT ONLY.
HOWEVER, IC2501(AN3845SC) IS AVAILABLE SEPARATERY AS A REPLACEMENT PART.
2. WHEN INSTALLING THE IC2501 OR CAPSTAN STATOR UNIT, BE SURE TO APPLY SILICON GREASE(VFK1301). REFER TO "CAPSTAN STATOR UNIT" OF "DISASSEMBLY/ASSEMBLY PROCEDURES OF MACHANISM" SECTION.

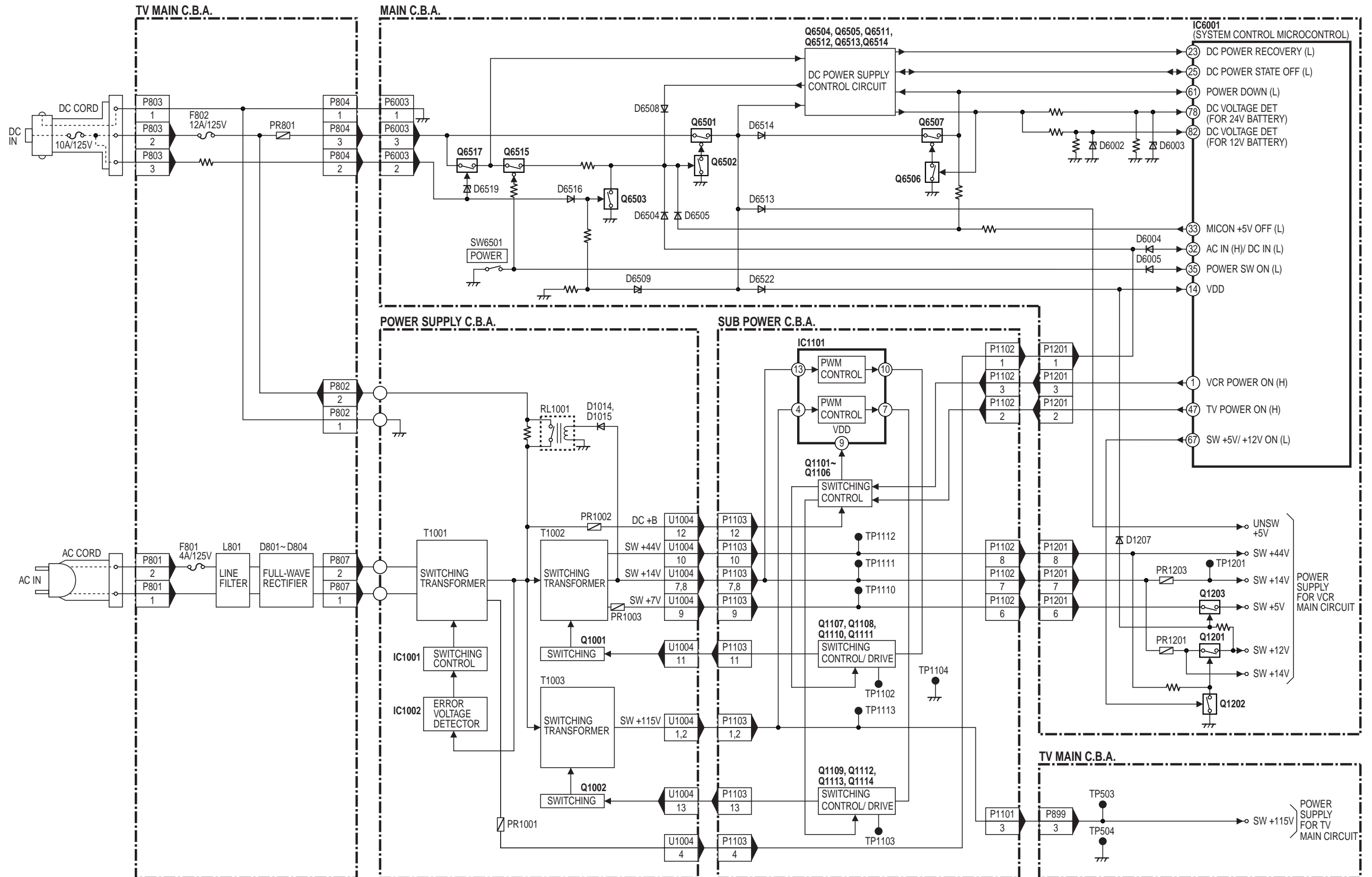
Diagram of the P6201 sub-board. The board is labeled with components: C2531, P2532, P2534, P2531, C2532, C2533, and P2531. A connection point is labeled "TO P6201 OF MAIN C.B.A.". The board is identified as VJBS0A25. The diagram is divided into three sections: A, B, and C.

Diagram illustrating the wiring for the unloading solenoid (unsol. for unloading) connected to the P2551 and P2552 connectors. The solenoid is represented by a circle with a '+' and '-' terminal. The wiring connects the solenoid to the P2551 and P2552 connectors. A note at the bottom indicates the connection to the main C.B.A. (Control Board Assembly) at P6002.

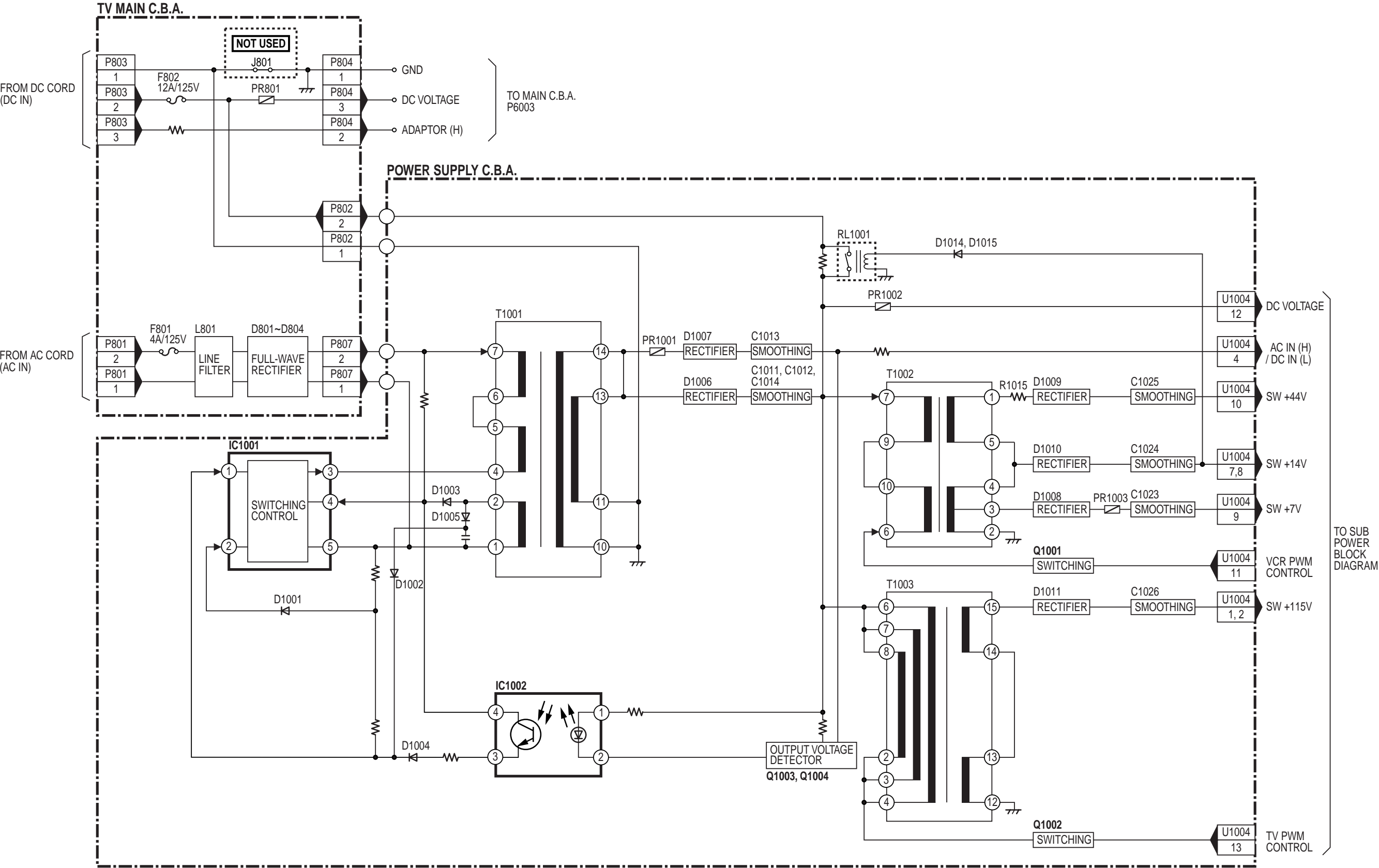
VJBS0A24

10 BLOCK DIAGRAMS

10.1. OVERALL BLOCK DIAGRAM FOR POWER SUPPLY

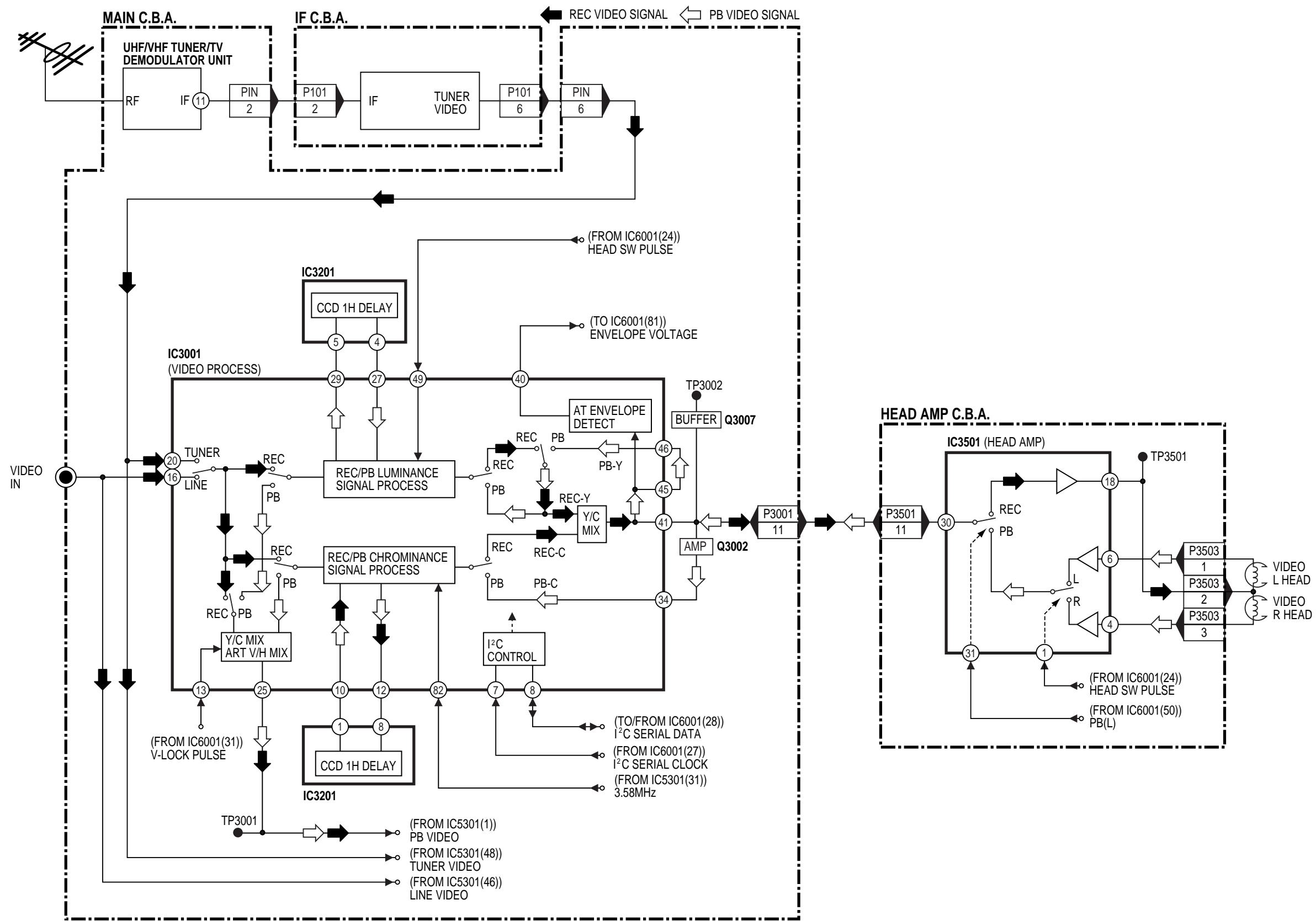


10.2. POWER SUPPLY BLOCK DIAGRAM



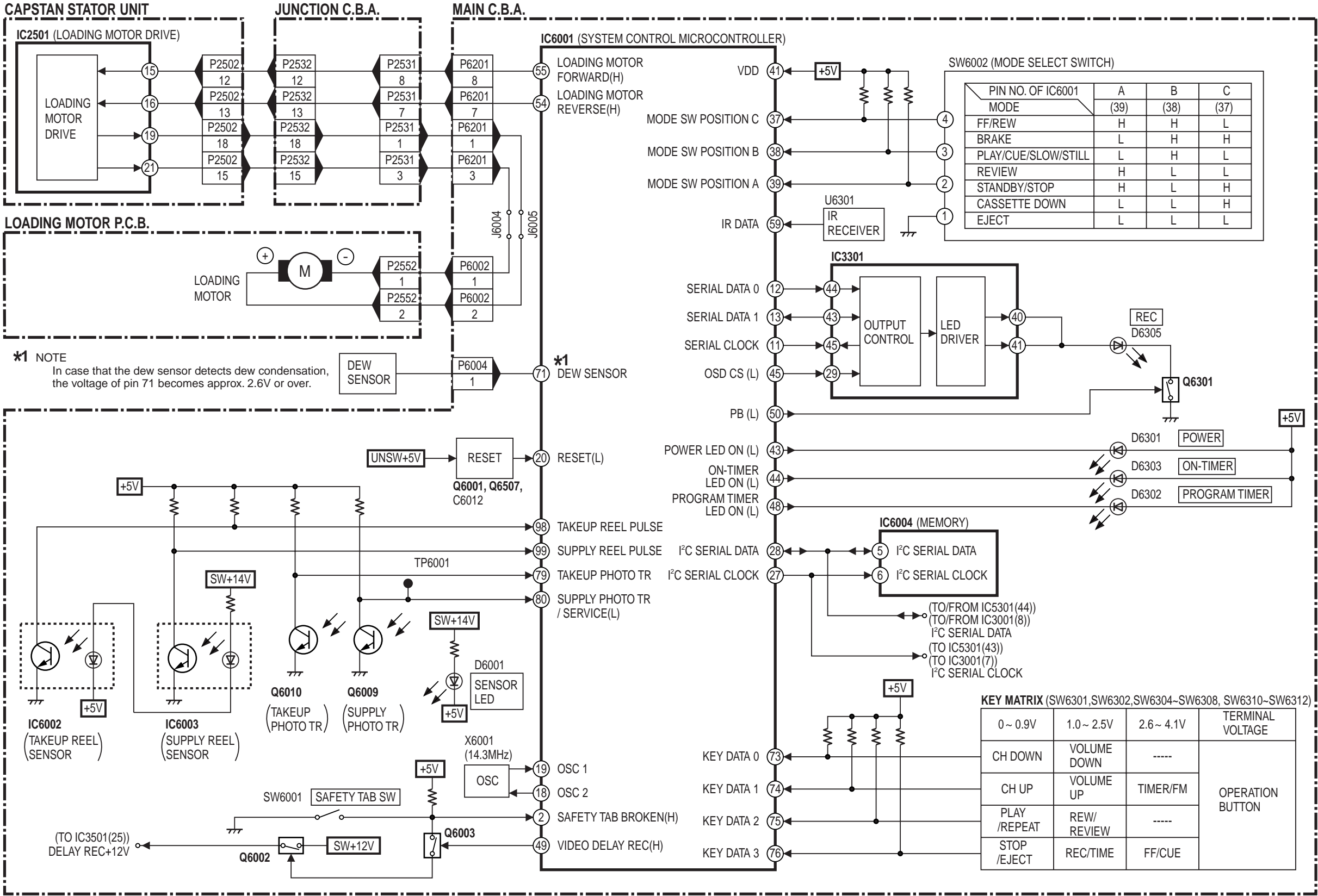


10.4. VIDEO SIGNAL PATH BLOCK DIAGRAM

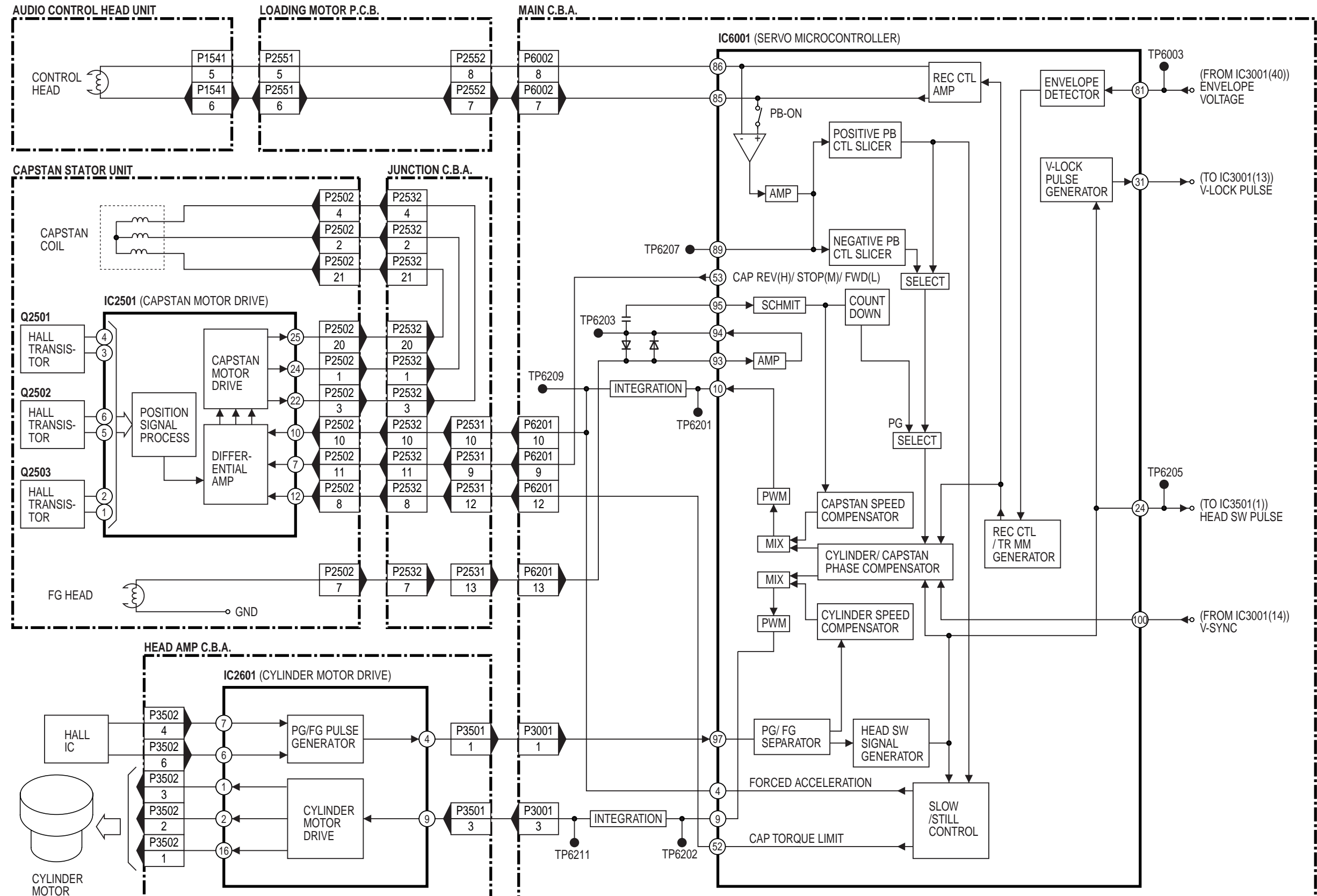




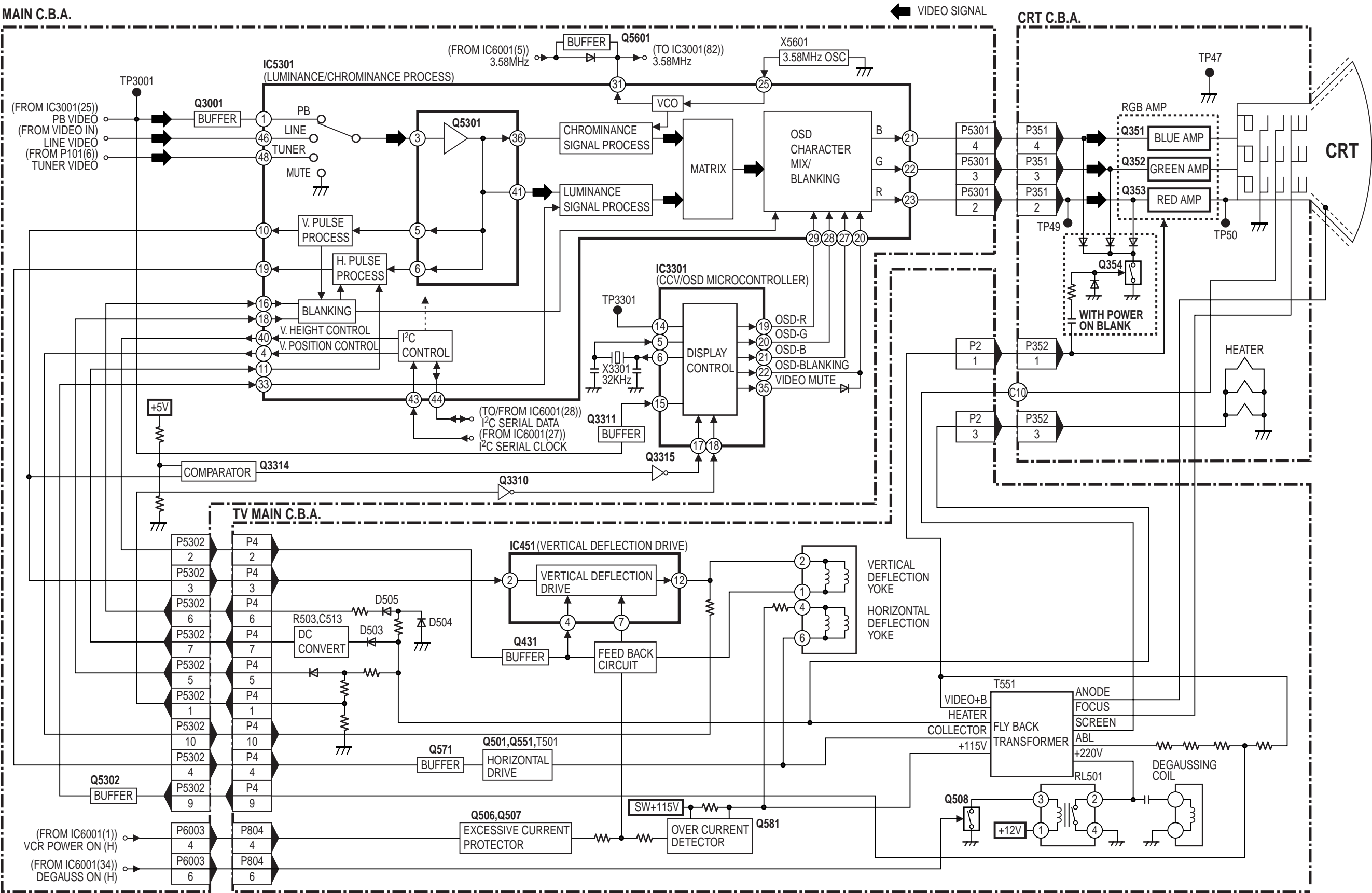
10.6. SYSTEM CONTROL BLOCK DIAGRAM



10.7. SERVO BLOCK DIAGRAM

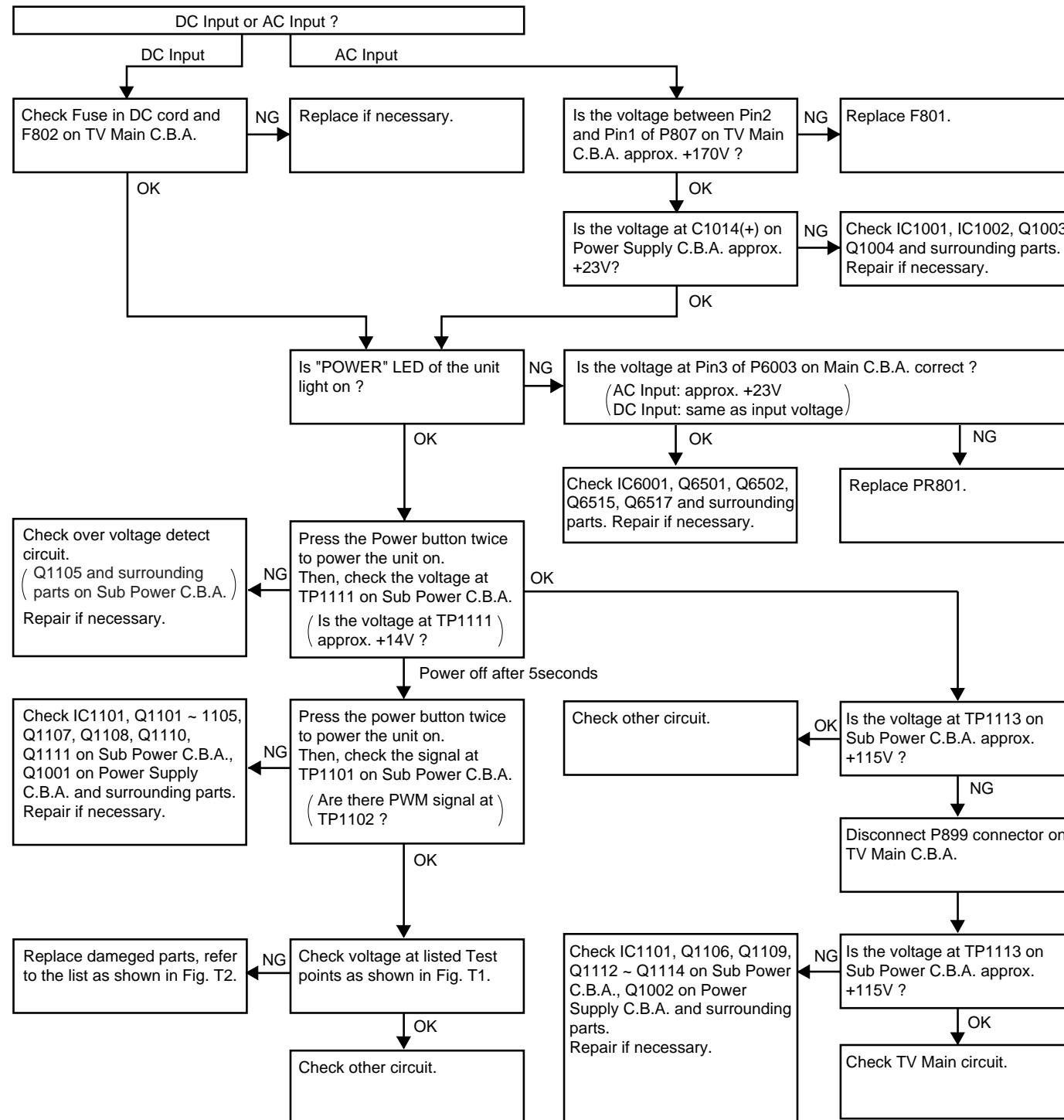


10.8. TV Y/C PROCESS/OSD/CCV/CRT BLOCK DIAGRAM



10.9. TROUBLESHOOTING HINTS FOR POWER SUPPLY

* If the Unit does not work when the power button is pressed, following the flowchart for troubleshooting.



Voltage of Power Line

Test Points (Sub Power C.B.A.)	Voltage
TP1110 (DC +7V)	+6.6V
TP1111 (DC +14V)	+14.2V
TP1112 (DC +44V)	+41.0V
TP1113 (DC +115V)	+115.4V

Note: The voltages are approximate. (In STOP mode under normal conditions.)

Fig. T1

When power line is short circuited, check the following parts. Replace If necessary.

1. Short circuit and replacement parts on power line.

Condition of short circuit	Damegeable parts by short circuit
5V ➡ GND	*PR1003, Q1203
44V ➡ GND	*R1015
14V ➡ GND 12V ➡ GND	D1010, Q1001 *PR1201, Q1201
44V ➡ 14V	*R1015
14V ➡ 7V	Q1203

Note 1: When a short circuit occurs supplying the power for a long time will cause the fuse blow.

Note 2: Parts with * mark are the most susceptible to damage in case of short circuit. Please check them first.

Fig. T2

2. In case of Fuse (F801) blow

Replace IC1001.

3. In case of Fuse in the DC cord blow (DC mode)

Replace parts: Q1001, Q1002

Cause ➡ It may be caused by a short circuit.

11 EXPLODED VIEWS

11.1. MECHANISM (TOP) SECTION

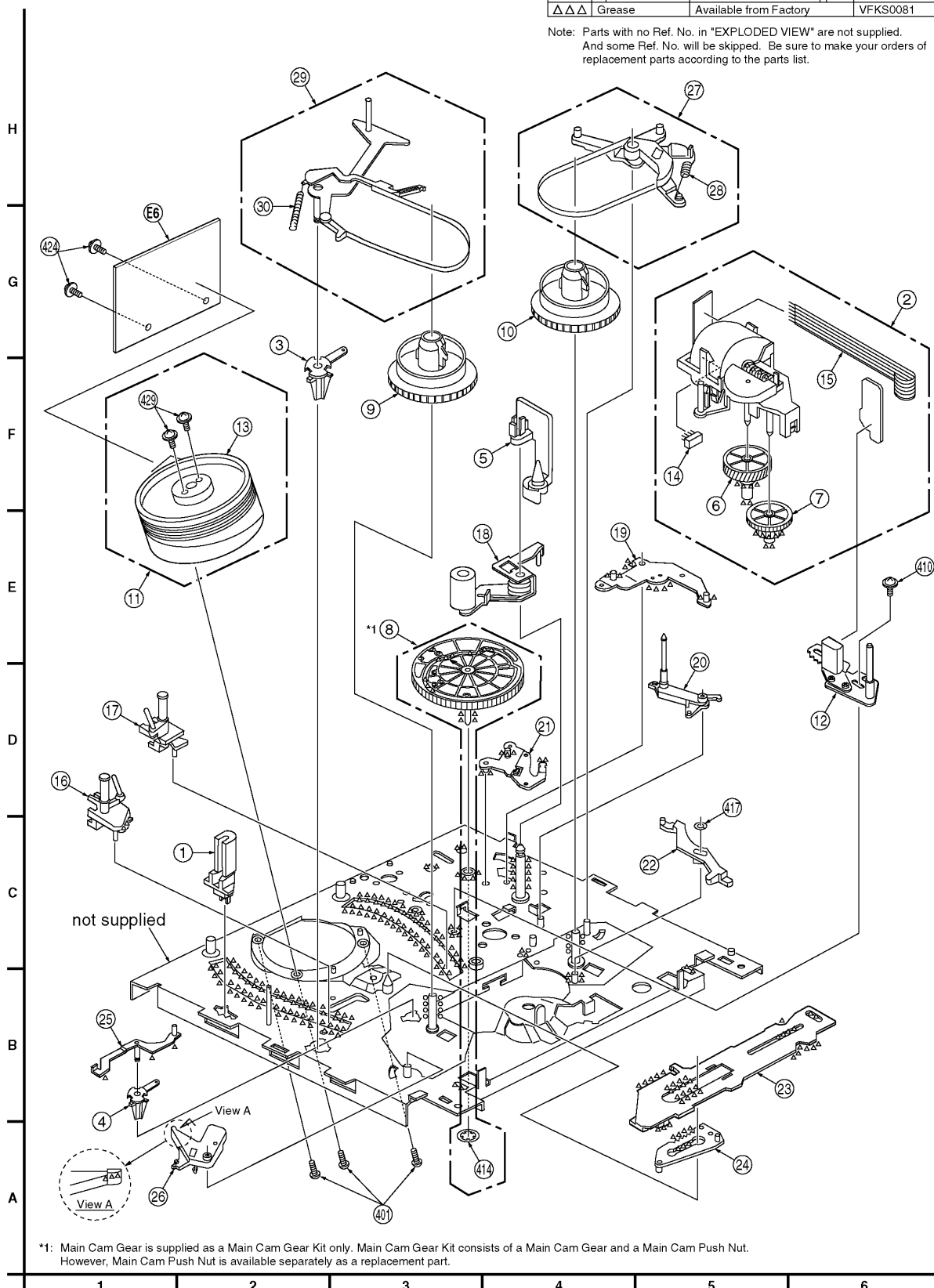
① MECHANISM (TOP) SECTION

LUBRICATION POINTS

When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
XXX	Silicon Grease	Available from Factory	VFK1301
OOO	Spindle Oil	Purchase from Local Supplier	-----
AAA	Grease	Available from Factory	VFKS0081

Note: Parts with no Ref. No. in "EXPLODED VIEW" are not supplied.
And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.



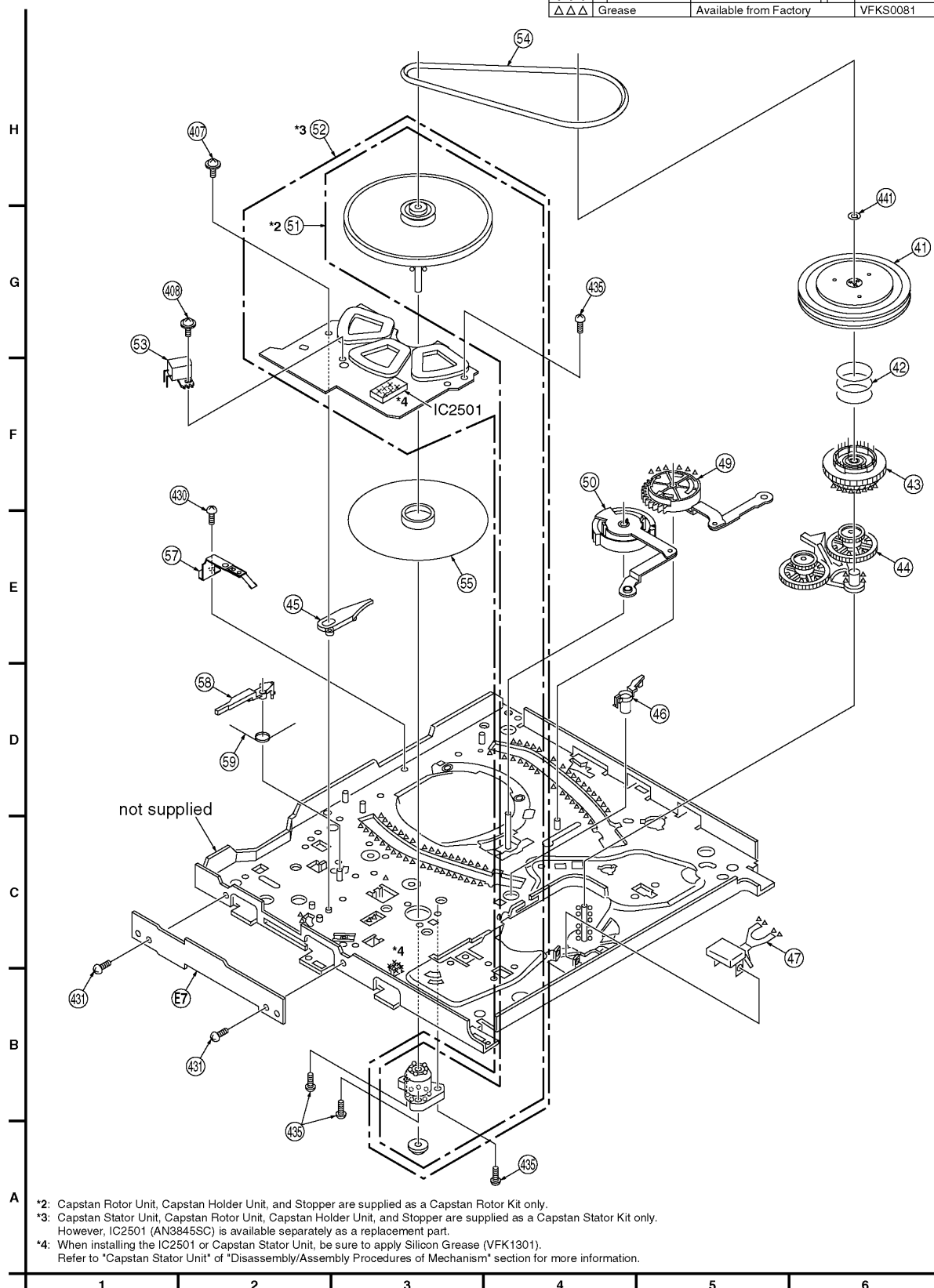
11.2. MECHANISM (BOTTOM) SECTION

② MECHANISM (BOTTOM) SECTION

LUBRICATION POINTS

When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
×××	Silicon Grease	Available from Factory	VFK1301
○○○	Spindle Oil	Purchase from Local Supplier	-----
△△△	Grease	Available from Factory	VFKS0081



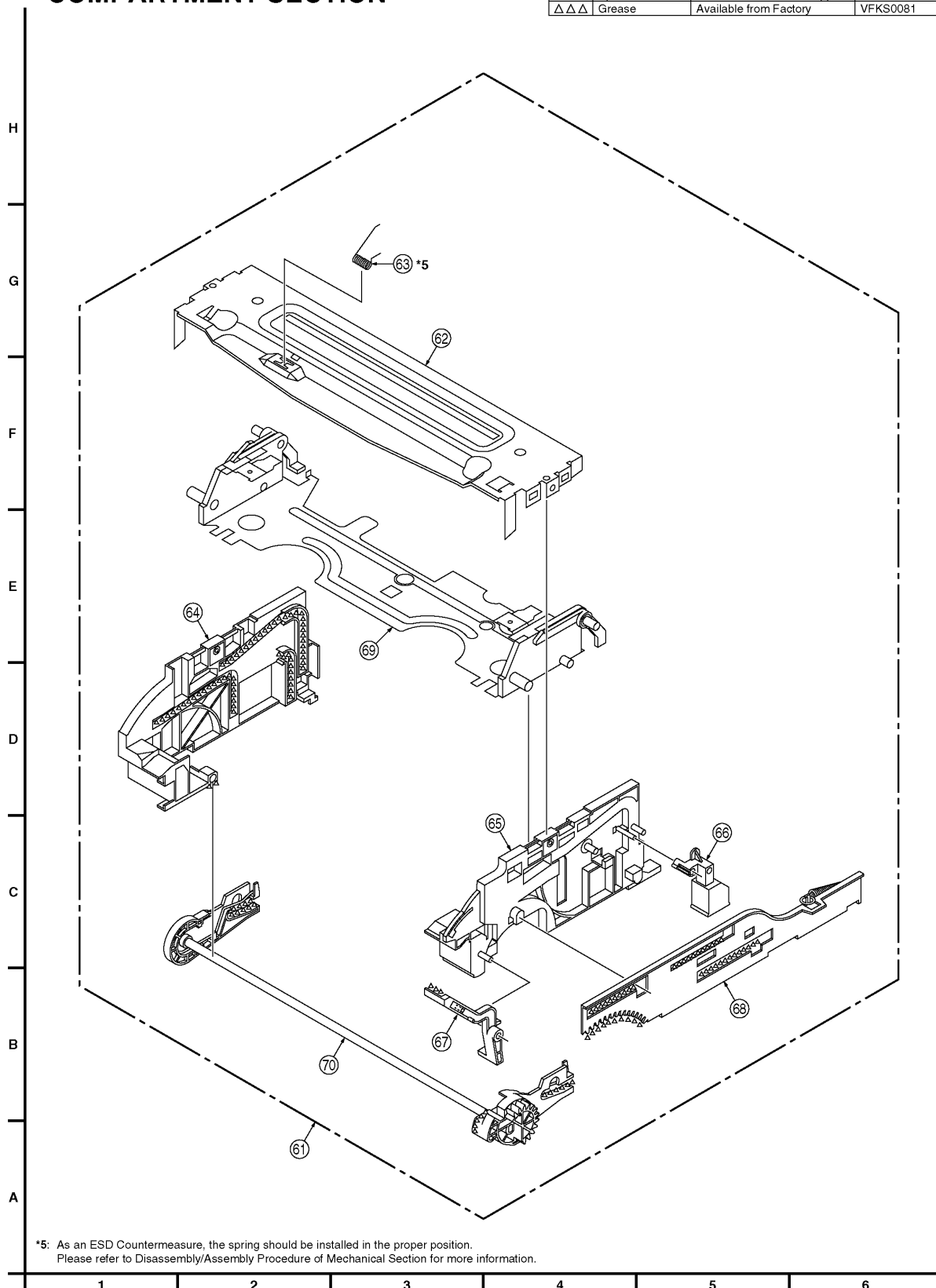
11.3. CASSETTE UP COMPARTMENT SECTION

③ CASSETTE UP COMPARTMENT SECTION

LUBRICATION POINTS

When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.


Mark	Kind of Lubricant	Availability	Part Number
× × ×	Silicon Grease	Available from Factory	VFK1301
○ ○ ○	Spindle Oil	Purchase from Local Supplier	-----
△ △ △	Grease	Available from Factory	VFKS0081

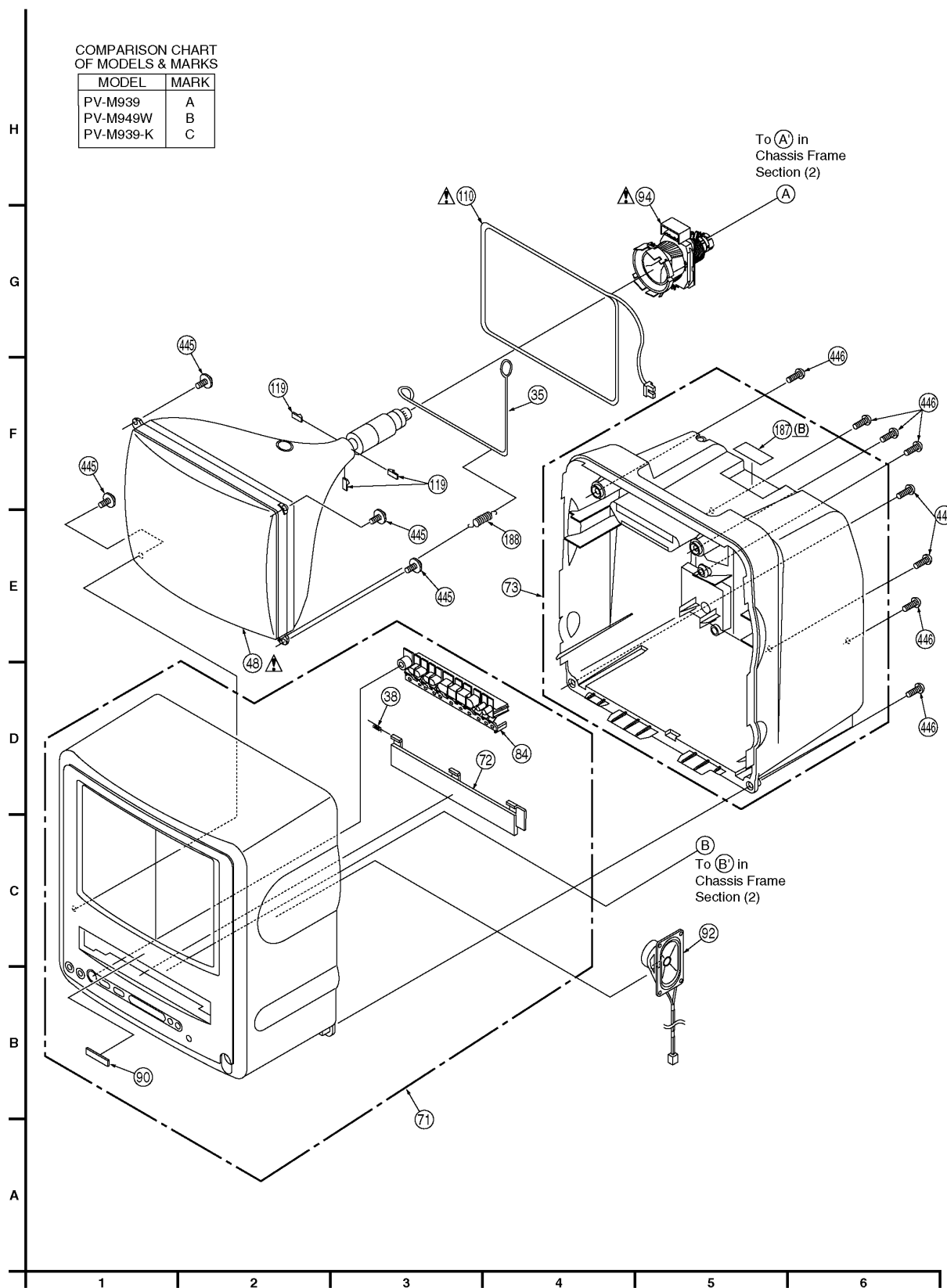


11.4. CHASSIS FRAME SECTION (1)

4 CHASSIS FRAME SECTION (1)

IMPORTANT SAFETY NOTICE


COMPONENTS IDENTIFIED BY THE SIGN  HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

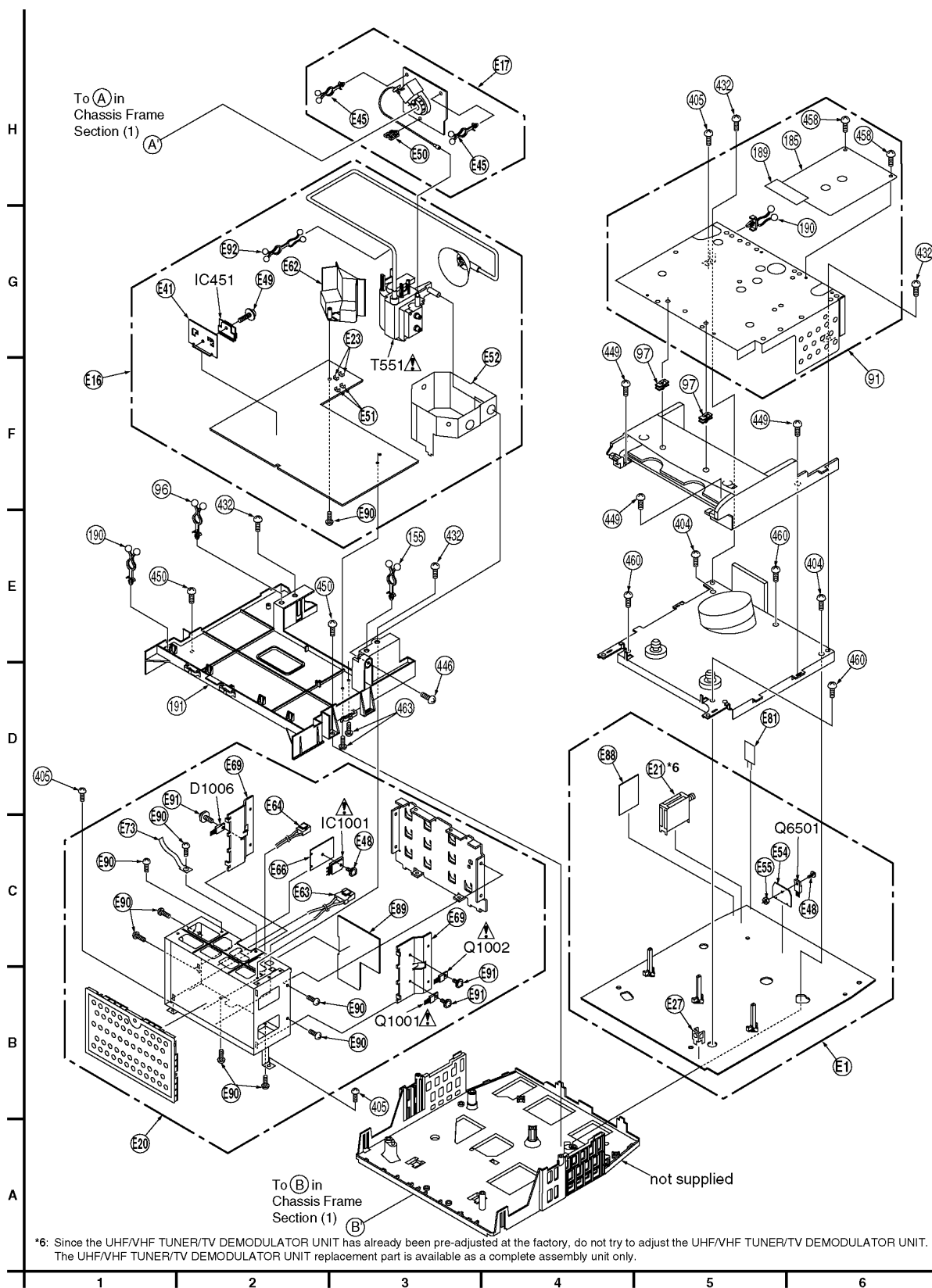


11.5. CHASSIS FRAME SECTION (2)

⑤ CHASSIS FRAME SECTION (2)

IMPORTANT SAFETY NOTICE


COMPONENTS IDENTIFIED BY THE SIGN  HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

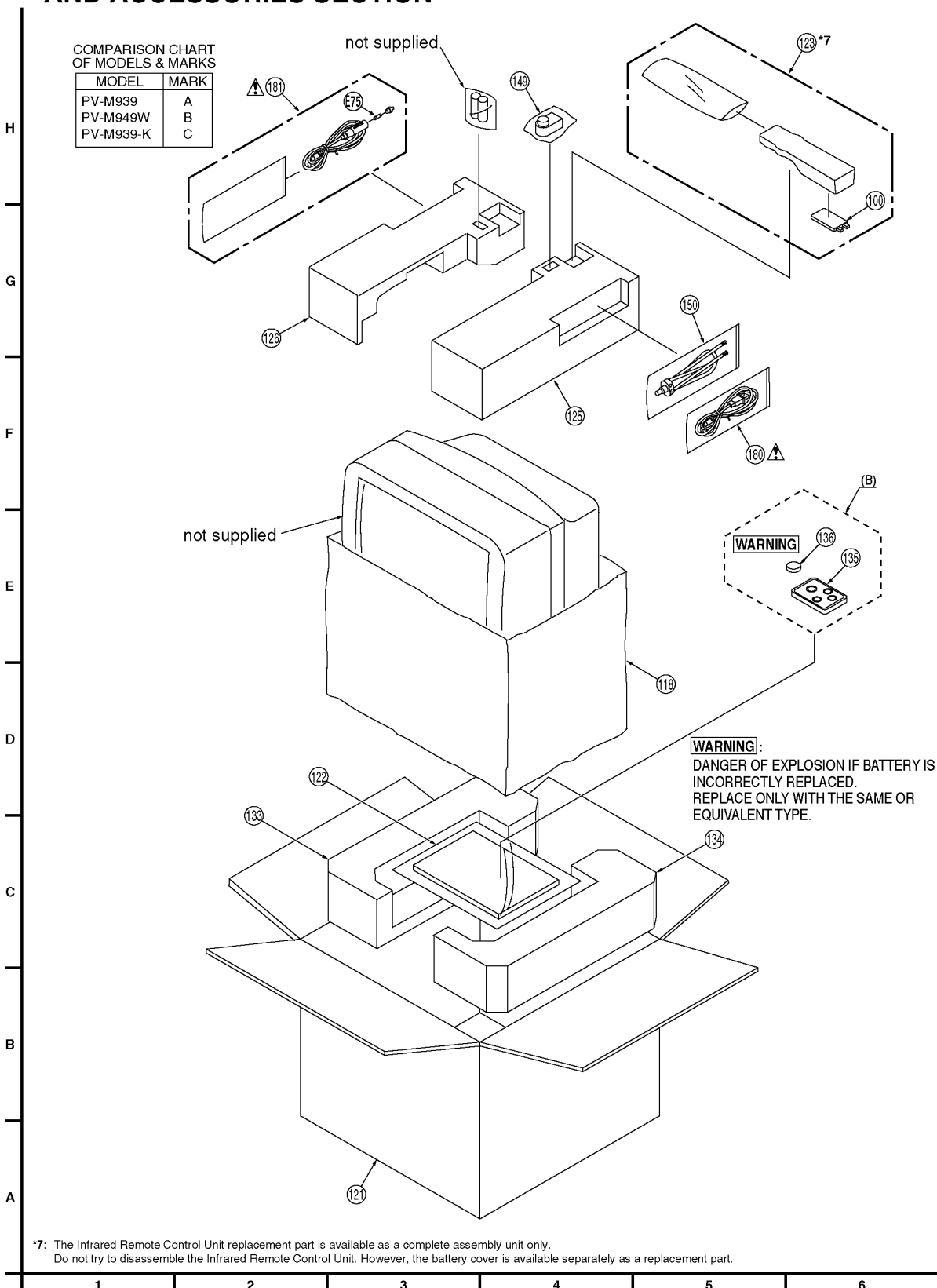


11.6. PACKING PARTS AND ACCESSORIES SECTION

⑥ PACKING PARTS AND ACCESSORIES SECTION

IMPORTANT SAFETY NOTICE

COMPONENTS IDENTIFIED BY THE SIGN  HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.



12 REPLACEMENT PARTS LIST

BEFORE REPLACING PARTS, READ THE FOLLOWING:

12.1. REPLACEMENT NOTES

12.1.1. General Notes

1. Use only original replacement parts:

To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list.

2. IMPORTANT SAFETY NOTICE

Components identified by the sign \triangle have special characteristics important for safety. When replacing any of these components, use only the specified parts.

3. SPECIAL NOTE

All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" section of this service manual.

4. Parts with no Ref. No. in "EXPLODED VIEW" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
5. Parts different in shape or size may be used. However, only interchangeable parts will be supplied as service replacement parts.
6. The parts which "MKA" is indicated in Remarks column will be supplied from MKA factory.

12.1.2. Mechanical Replacement Notes

1. Section No. of parts shown in Exploded Views are indicated in the Remarks column.
2. Capstan Rotor Unit, Capstan Holder Unit, and Stopper are supplied as Capstan Rotor Kit (Ref. No. 51) only.
3. Capstan Stator Unit, Capstan Rotor Unit, Capstan Holder Unit, and Stopper are supplied as a Capstan Stator Kit (Ref. No. 52) only. However, IC2501 (AN3845SC) is available separately as a replacement part. When installing the IC2501 or Capstan Stator unit, be sure to apply Silicon Grease (VFK1301). Refer to "Capstan Stator Unit" of "DISASSEMBLY/ASSEMBLY PROCEDURES OF MECHANISM" section.
4. Main Cam Gear is supplied as a Main Cam Gear Kit only. Main Cam Gear Kit consists of a Main Cam Gear and a Main Cam Push Nut. However, Main Cam Push Nut is available separately as a replacement part.
5. Since the UHF/VHF TUNER/TV DEMODULATOR UNIT (Ref. No. E21) has already been pre-adjusted at the factory, do not try to adjust the UHF/VHF TUNER/TV DEMODULATOR UNIT. The UHF/VHF TUNER/TV DEMODULATOR UNIT replacement part is available as a complete assembly unit only.
6. The Infrared Remote Control Unit (Ref. No. 123) replacement part is available as a complete assembly unit only. Do not try to disassemble the Infrared Remote Control Unit. However, the battery cover is available separately as a replacement part.

7. Cut Washers (Ref. No. 417 and 441) are not reusable. If removed, install a new one.
8. Main Cam Push Nut (Ref. No. 414) is not reusable. If removed, install a new one.

12.1.3. Electrical Replacement Notes

1. Item numbers with capital letter E (Example: E1, E2,...) in the Ref. No. column are shown in the exploded views.
2. The parts with "■" mark are supplied individually or as a unit. The parts with "▲" mark are supplied individually or as a unit, and are included in "■" parts listed directly above in the parts list.
3. Unless otherwise specified;
 - All resistors are in ohms, 1/4W, +/-5%, carbon, K = 1,000 ohm, M = 1,000 kohm.
 - All capacitors are in microfarads, P = micromicrofarad, +/-10%.
 - All coils are in microhenries, M = 1,000 microhenry, +/-10%.

4. Abbreviation

RTL:	Retention Time Limited
	This indicates that the retention time is limited for this item. After the discontinuation of this item in production, it will no longer be available.

NR: Non Repairable Board Ass'y

MGF CHIP: Metal Glaze Film Chip

C CHIP: Ceramic Chip

COMPLX CMP: Complex Component

W FLMPRF: Wirewound Flameproof

C.B.A.: Circuit Board Assembly

P.C.B.: Printed Circuit Board

E.S.D.: Electrostatically Sensitive Devices

5. SERVICE OF CHIP PARTS

When servicing chip parts, please use a soldering iron of less than 30 watts. Refer to "IC, TRANSISTOR AND CHIP PART INFORMATION" page.

6. The parts with "●" are 0 ohm resistor. When replacing, a wire can be substituted for a 0 ohm resistor.
7. IC6001 replacement note:
 - The manufacturing part number is UPD784928YGF-102. However, to order the part, use service order part number D784928YG102.

COMPARISON CHART MODELS & MARKS

COMPARISON CHART
OF MODELS & MARKS

MODEL	MARK
PV-M939	A
PV-M949W	B
PV-M939-K	C

12.2. MECHANICAL REPLACEMENT PARTS LIST

MECHANISM PARTS ON CHASSIS

Ref. No.	Part No.	Part Name & Description	Remarks
			(Section No.)
1	VBSS0033	FULL ERASE HEAD	1
2	VXKS0867	MOTOR BLOCK ASS'Y	1
	OR VXKS0876		
3	VDBS0349	TENSION ARM BOSS	1
4	VDBS0351	S BRAKE ARM BOSS	1
5	VMDS0971	OPENER PIECE	1
6	VDGS0428	WORM WHEEL GEAR	1
7	VDGS0429	INTERMEDIATE GEAR	1
8	VVGS0008	MAIN CAM GEAR KIT	1
9	VDRS0056	S REEL TABLE	1
10	VDRS0057	T REEL TABLE	1
11	VEGS0417	CYLINDER UNIT	1
12	VEHS0569	AUDIO CONTROL/ERASE HEAD UNIT	1
13	VEHS0571	UPPER CYLINDER UNIT	1
14	VJSS0882	CONNECTOR 8P	1
15	VJWS6LB100LL	COMMU CABLE W/OUT PLUG	1
16	VXDS0198	LOADING POST BASE-S UNIT	1
17	VXDS0195	LOADING POST BASE-T UNIT	1
18	VXLS1078	PINCH ARM UNIT	1
19	VMLS0978	MAIN LEVER DRIVE ARM	1
20	VXLS1063	P5 ARM UNIT	1
21	VMLS0976	DRIVE RACK ARM	1
22	VMLS0972	CHANGING LEVER A	1
23	VMLS0977	MAIN LEVER	1
24	VXLS1072	LOADING RACK UNIT	1
25	VXLS1061	S BRAKE ARM UNIT	1
26	VMLS0982	S SPRING ARM	1
27	VXLS1062	T BRAKE UNIT	1
28	VMBS1150	T BRAKE SPRING	1
29	VXLS1074	TENSION ARM UNIT	1
30	VMBS1164	TENSION SPRING	1
35	LXQ3A01099	GROUNDING WIRE	4 MKA
38	LEB62001A	CASSETTE DOOR SPRING	4 MKA
41	VXPS0379	CENTER CLUTCH UNIT	2
42	VMBS1151	CHANGING GEAR SPRING	2
43	VDGS0425	CHANGING GEAR	2
44	VXLS1053	IDLER ARM UNIT	2
45	VMDS0985	PCB HOLDER	2
46	VMDS0982	MAIN LEVER GUIDE	2
47	VMLS0973	CHANGING LEVER B	2
48	A23KQU22X	COLOR PICTURE TUBE	4 Δ MKA
49	VXLS1054	S LOADING ARM UNIT	2
50	VXLS1056	T LOADING ARM UNIT	2
51	VXPS0382K2	CAPSTAN ROTOR KIT	2
52	VEMS0316K2	CAPSTAN STATOR KIT	2
53	VBKS0040	FG HEAD	2
54	VDVS0087	CAPSTAN BELT SQUARE, ELASTOMER 2MM	2
55	VMAS2135	SUB ROTOR	2
57	VXBS0061	GROUNDING PLATE UNIT	2
58	VXLS1070	SS BRAKE ARM UNIT	2
59	VMBS1155	SS BRAKE SPRING	2
61	VXYS1308	CASSETTE UP ASS'Y	3 MKA
62	VMAS2131	TOP PLATE	3
63	VMBS1159	GROUNDING SPRING	3
64	VMDS0990	SIDE PLATE L	3
65	VMDS0974	SIDE PLATE R	3
66	VMDS0979	SENSOR COVER	3
67	VMLS0987	OPENER LEVER	3
68	VXLS1064	DRIVE RACK UNIT	3
69	VXAS4404	HOLDER UNIT	3
70	VXLS1065	WIPER ARM UNIT	3
71		FRONT CABINET ASS'Y	
	LXQKY1099VP	(A, C)	4 MKA
	LXQKY1099VPW	(B)	4 MKA

Ref. No.	Part No.	Part Name & Description	Remarks
72		CASSETTE DOOR-LID	
	LKK688038A	(A, C)	4 MKA
	LKK688045A	(B)	4 MKA
73		REAR COVER UNIT	
	LXQKV1099VP	(A)	4 MKA
	LXQKV1099VPW	(B)	4 MKA
	LXQKV1099VPK	(C)	4 MKA
84		OPERATION BUTTON	
	LBX61073A	(A, C)	4 MKA
	LBX61077A	(B)	4 MKA
90	TBM153023	BADGE, ABS RESIN	4 MKA
91	LXQUS1099V	TOP SHIELD PLATE ASS'Y	5 MKA
92	LXQAS01099	SPEAKER UNIT	4 MKA
94	LLY6313K	DEFLECTION YOKE	4 Δ MKA
96	IML69002A	CLAMPER	5 MKA
97	VMXS0869	DOUBLE LOCKING SPACER	5 MKA
100		BATTERY COVER	
	VKFS2235	(A, C)	6 MKA
	VKFS2237	(B)	6 MKA
110	LLJ69007Z	DEGAUSSING COIL	4 Δ MKA
118	LPE64003A	BAG, POLYETHYLENE	6 MKA
119	LMH65001A	DY ADJUSTMENT RUBBER	4 MKA
121		PACKING CASE, PAPER	
	LPH610201A	(A)	6 MKA
	LPH610202A	(B)	6 MKA
	LPH610203A	(C)	6 MKA
122		FAN BAG	
	VQFS3526	(A)	6
	VQFS3549	(B)	6
	VQFS3554	(C)	6
123		INFRARED REMOTE CONTROL UNIT	
	VSQS1602	(A, C)	6 MKA
	VSQS1605	(B)	6 MKA
125	LPJ61031A	TOP CUSHION RIGHT, STYROFOAM	6 MKA
126	LPJ61032A	TOP CUSHION LEFT, STYROFOAM	6 MKA
133	LPJ62032A	BOTTOM CUSHION LEFT, STYROFOAM	6 MKA
134	LPJ62031A	BOTTOM CUSHION RIGHT, STYROFOAM	6 MKA
135		INFRARED REMOTE CONTROL UNIT FOR KITCHEN TIMER	
	VSQS1572	(B)	6
136		BATTERY UNIT	
	VSBW0004	(B)	6
149	VSQS0974	VHF ANTENNA ADAPTOR	6 MKA
150	TSA700009	VHF ROD ANTENNA	6 MKA
155	TMM76403-1	CLAMPER	5 MKA
180		AC CORD W/PLUG	
	VJAW0044	(A, C)	6 Δ MKA
	LFX6109A	(B)	6 Δ MKA
181	LFX6301A	DC CORD W/PLUG	6 Δ MKA
185	LUS61017A	SHIELD PLATE	5 MKA
187		METAL SHEET	
	LKK684001A	(B)	4 MKA
188	TES7602	COIL SPRING	4 MKA
189	VMFS0320	SPACER	5 MKA
190	TMM7464-1	CLAMPER	5 MKA
191	IML63005A	TV FRAME	5 MKA

SCREWS AND WASHERS

Ref. No.	Part No.	Part Name & Description	Remarks
401	VHDS0475	SCREW, STEEL	1
404	VHDS0472	SCREW, STEEL	5
405	VHDS0496	SCREW W/WASHER, STEEL	5
407	XYN26+C5	SCREW W/WASHER, STEEL	2
408	XYN2+J5FZ	SCREW W/WASHER, STEEL	2
410	VHDS0498	SCREW W/WASHER, STEEL	1
414	VHNS0070	MAIN CAM PUSH NUT, STEEL	1
417	VMXS0865	CUT WASHER, NYLON	1
424	XYC26+SF6J	SCREW W/WASHER, STEEL	1

Ref. No.	Part No.	Part Name & Description	Remarks
429	VHDS0491	SCREW W/WASHER,STEEL	1
430	XTV26+6FFZJ	TAPPING SCREW,STEEL	2
431	XTV26+6FJ	TAPPING SCREW,STEEL	2
432	XTV3+8JR	TAPPING SCREW,STEEL	5
435	XSN26+4	SCREW,STEEL	2
441	VMXS0499	CUT WASHER,NYLON	2
445	LHT60004Y	SCREW,STEEL	4
446	XTV4+16A	TAPPING SCREW,STEEL	4,5 MKA
449	VHDS0493	TAPPING SCREW,STEEL	5
450	VHDS0309	TAPPING SCREW,STEEL	5
458	XTV3+8F	TAPPING SCREW,STEEL	5
460	XTN4+12A	TAPPING SCREW,STEEL	5
463	XTW3+12Q	TAPPING SCREW,STEEL	5

SERVICE FIXTURES AND TOOLS

Ref. No.	Part No.	Part Name & Description	Remarks
	VFMS0003H6	VHS ALIGNMENT TAPE	
	VFKS0009	REEL TABLE HEIGHT FIXTURE	
	VFKS0010	POST ADJUSTMENT PLATE	
	VFKS0081	GREASE	
	VFK0329	POST ADJUSTMENT DRIVER	
	VFK1301	SILICON GREASE	
	VFK27	HEAD CLEANING STICK	
	VFK0330	H-POSITION ADJUSTMENT DRIVER	
	VUZS0002	EXTENSION CABLE KIT	
	VUVS0001	MODE SELECT SW ASS'Y	
	VUVS0002	EXTENSION CABLE -1	
	VUVS0003	EXTENSION CABLE -2 (FOR Hi-Fi MODEL)	
	VUVS0004	EXTENSION CABLE -2 (FOR 4 HEAD MODEL)	
	VUVS0005	EXTENSION CABLE -2 (FOR 2 HEAD MODEL)	

12.3. ELECTRICAL REPLACEMENT PARTS LIST

PRINTED CIRCUIT BOARD ASSEMBLY

Ref. No.	Part No.	Part Name & Description	Remarks
E1	VEPS3070A	MAIN C.B.A.	■ E.S.D. RTL MKA
E20	LRM63006A	POWER SUPPLY C.B.A.	■ RTL MKA
E89	LRP63007A	SUB POWER C.B.A.	▲ RTL MKA
E6	VEPS5021Z	HEAD AMP C.B.A.	■ RTL MKA
E7	VEPS0A25A	JUNCTION C.B.A.	■ RTL
E16	LRP61009A	TV MAIN C.B.A.	■ RTL MKA
E17	LRP63003A	CRT C.B.A.	■ RTL MKA

12.3.1. MAIN C.B.A. ■

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name & Description	Remarks
IC3001	AN3479FBP	IC, LINEAR VIDEO/AUDIO PROCESS	
IC3201	MN3885S	IC, CCD 1H DELAY	E.S.D.
IC3301	LC8632165K00	IC, 8BIT MICROCONTROLLER	E.S.D. MKA
	OR LC8632165K13	IC, 8BIT MICROCONTROLLER	E.S.D.
IC4501	AN5265	IC, LINEAR AUDIO AMP	
IC5301	AN5367FB	IC, LINEAR Y/C SIGNAL PROCESS	MKA
IC6001	D784928YG102	IC, 16BIT MICROCONTROLLER	E.S.D.
IC6002	CNA1801N	REEL SENSOR UNIT	
	OR SG-254	REEL SENSOR UNIT	
	OR SG-254A	REEL SENSOR UNIT	

Ref. No.	Part No.	Part Name & Description	Remarks
IC6003	CNA1801N	REEL SENSOR UNIT	
	OR SG-254	REEL SENSOR UNIT	
	OR SG-254A	REEL SENSOR UNIT	
IC6004	AT24C01A10PI	IC, 1K EEPROM MEMORY	E.S.D. MKA
	OR M24C01-BN6	IC, 1K EEPROM MEMORY	E.S.D. MKA
	OR ST24C01FB6	IC, 1K EEPROM MEMORY	E.S.D. MKA
	OR 24LC01B/P	IC, 1K EEPROM MEMORY	E.S.D. MKA

TRANSISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
Q1201	2SC3852		
	OR 2SD2375 (P,Q)		
	OR 2SD2396 (K)		
Q1202	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q1203	2SC3852		
	OR 2SD2375 (P,Q)		
	OR 2SD2396 (K)		
Q3001	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q3002	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q3007	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q3302	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q3310	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q3311	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q3314	HN1C01F (GR)	COMPLX CMP SI NPN CHIP	
	OR IMX1	COMPLX CMP SI NPN CHIP	
	OR XN4501	COMPLX CMP SI NPN CHIP	
Q3315	DTA124EK	CHIP	
	OR UN2112	CHIP	
Q4001	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q4002	2SD601 (R,S)	CHIP	
Q4003	2SD601 (R,S)	CHIP	
Q4101	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q4154	DTC124EK	CHIP	
	OR UN2212	CHIP	
Q4171	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5301	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5302	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5601	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q5901	2SD1858 (R)		
	OR 2SD2259		
Q6001	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q6002	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q6003	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q6009	VEKS5522	PHOTO SENSOR UNIT	
Q6010	VEKS5522	PHOTO SENSOR UNIT	
Q6251	2SC3852		
	OR 2SD2375 (PQ)		
	OR 2SD2396 (K)		
Q6252	2SA1037K146R	CHIP	

Ref. No.	Part No.	Part Name & Description	Remarks
	OR 2SB709A	CHIP	
Q6254	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q6301	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q6501	2SB940 (P)		
Q6502	2SD814A		
Q6503	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q6504	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q6505	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q6506	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q6507	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q6511	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q6512	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q6513	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q6514	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q6515	2SA1037K146R	CHIP	
	OR 2SB709A	CHIP	
Q6517	2SK374 (R,S)	F.E.T. CHIP	

DIODES

Ref. No.	Part No.	Part Name & Description	Remarks
D1201	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D1202	MA4100N	ZENER 10V	
	OR RD10JSAB3	ZENER 10V	
D1203	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D1204	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D1207	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D3302	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D4171	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D4521	MA4120-M	ZENER 12V	
D4522	MA4056-M	ZENER 5.6V	
D4525	RD9.1EW	9.1V	
D5304	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D5501	MA4062-L	ZENER 6.2V	△
D5504	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D5601	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		

Ref. No.	Part No.	Part Name & Description	Remarks
D6001	VEKS5521	SENSOR LED UNIT	
D6002	MA4051N-TAKT	ZENER 5.1V	
D6003	MA4051N-TAKT	ZENER 5.1V	
D6004	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D6005	MA167		
D6006	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D6201	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D6202	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D6251	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D6301	SLP313C81HAB	LED GREEN	
D6302	SLP313C81HAB	LED GREEN	
D6303	SLP413C81HAB	LED ORANGE	MKA
D6305	SLP913C81HAB	LEDRED	
D6502	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D6504	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D6505	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D6507	MA4051N-TAKT	ZENER 5.1V	
D6508	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D6509	MA4051N-TAKT	ZENER 5.1V	
D6510	MA4047N-M	ZENER 4.7V	
D6511	MA4062N-M	ZENER 6.2V	
D6513	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D6514	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D6515	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D6518	MA4062N-L	ZENER 6.2V	
D6519	MA4390N-M	ZENER 39V	
D6520	MA4390N-M	ZENER 39V	
D6521	MA4390N-M	ZENER 39V	
D6522	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D6523	MA165		

Ref. No.	Part No.	Part Name & Description	Remarks
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D6524	MA4390N-M	ZENER 39V	
D6525	MA4390N-M	ZENER 39V	
D6526	MA4160N-L	ZENER 1.6V	
D7001	MA4300-H	ZENER 30V	
	OR MA4300-M	ZENER 30V	

RESISTORS

Ref. No.	Part No.	PartName & Description	Remarks
R1201	ERDS2TJ103	10K	
R1202	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R1203	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R1204	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R1208	ERDS2TJ470	47	
R1209	ERDS2TJ101	100	
R1210	ERDS2TJ101	100	
R1211	ERDS2TJ470	47	
R1212	ERDS2TJ470	47	
R3001	ERDS2TJ221	220	
R3004	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R3005	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R3006	ERDS2TJ221	220	
R3010	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
R3012	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R3013	ERDS2TJ221	220	
R3014	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R3015	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R3016	ERJ6GEYJ121V	MGF CHIP 1/10W 120	
R3017	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R3018	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R3019	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R3024	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R3025	ERJ6GEYJ125V	MGF CHIP 1/10W 1.2M	
R3026	ERJ6GEYJ474V	MGF CHIP 1/10W 470K	
R3028	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R3029	ERJ6GEYJ151V	MGF CHIP 1/10W 150	
R3032	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R3034	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R3035	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R3036	ERJ6GEYJ102V	MGF CHIP +-2% 1/10W 1K	
R3037	ERJ6GEYJ102V	MGF CHIP +-2% 1/10W 1K	
R3038	ERDS2TJ222	2.2K	
R3039	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R3040	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R3042	ERDS2TJ103	10K	
R3043	ERJ6GEYJ222V	MGF CHIP +-2% 1/10W 2.2K	
R3044	ERJ6GEYJ562V	MGF CHIP +-2% 1/10W 5.6K	
R3045	ERJ6GEYJ152V	MGF CHIP +-2% 1/10W 1.5K	
R3046	ERJ6GEYJ103V	MGF CHIP +-2% 1/10W 10K	
R3077	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R3081	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R3082	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R3083	ERJ6GEYJ271V	MGF CHIP 1/10W 270	
R3084	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R3085	ERJ6GEYJ181V	MGF CHIP 1/10W 180	
R3091	ERJ6GEYJ750V	MGF CHIP 1/10W 75	
R3301	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R3302	ERJ6GEYJ394V	MGF CHIP 1/10W 390K	
R3304	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R3305	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R3312	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R3321	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R3326	ERJ6GEYJ105V	MGF CHIP 1/10W 1M	
R3328	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R3329	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R3330	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R3331	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R3336	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R3338	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R3345	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R3352	ERDS2TJ151	150	

Ref. No.	Part No.	PartName & Description	Remarks
R3353	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R3354	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R3355	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R3361	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R3362	ERJ6GEYJ822V	MGF CHIP 1/10W 8.2K	
R3363	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R3365	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R3366	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R3372	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R3375	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R3377	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R3378	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R3379	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R3380	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R3381	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R3390	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R3391	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R3392	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4001	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4002	ERJ6GEYJ334V	MGF CHIP 1/10W 330K	
R4003	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R4004	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R4005	ERJ6GEYJ225V	MGF CHIP 1/10W 2.2M	
R4006	ERJ6GEYJ681V	MGF CHIP 1/10W 680	
R4007	ERJ6GEYJ821V	MGF CHIP 1/10W 820	
R4008	ERJ6GEYJ273V	MGF CHIP 1/10W 27K	
R4009	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4010	ERDS2TJ473	47K	
R4011	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R4012	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R4013	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R4014	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R4015	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R4018	ERJ6GEYJ123V	MGF CHIP 1/10W 12K	
R4021	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4051	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	
R4052	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R4101	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R4102	ERJ6GEYJ274V	MGF CHIP 1/10W 270K	
R4103	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R4171	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R4172	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4173	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R4175	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4504	ERJ6GEYJ823V	MGF CHIP 1/10W 82K	
R4506	ERJ6GEYJ681V	MGF CHIP 1/10W 680	
R4507	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R4508	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R4509	ERDS2TJ100	10	
R4523	ERDS2TJ221	220	
R4524	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4525	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4591	ERDS2TJ560	56	
R4701	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R5301	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R5302	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R5303	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R5304	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	
R5305	ERJ6GEYJ224V	MGF CHIP 1/10W 220K	
R5306	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R5307	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R5308	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	
R5309	ERJ6GEYJ184V	MGF CHIP 1/10W 180K	
R5311	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5312	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5313	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5314	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R5315	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R5316	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R5318	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R5322	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
R5324	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5325	ERJ6GEYJ101V	MGF CHIP 1/10W 100	

Ref. No.	Part No.	PartName & Description	Remarks
R5401	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R5402	ERJ6GEYJ394V	MGF CHIP 1/10W 390K	
R5403	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R5405	ERJ6GEYJ822V	MGF CHIP 1/10W 8.2K	
R5406	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5501	ERJ6GEYJ271V	MGF CHIP 1/10W 270	
R5502	ERJ6GEYJ394V	MGF CHIP 1/10W 390K	
R5503	ERDS2TJ471	470	
R5504	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5505	ERJ6ENF3241V	MGF CHIP +-1% 1/10W 3.24K	△ MKA
R5506	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R5508	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R5510	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5511	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R5512	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5513	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R5515	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R5601	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R5604	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R5611	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R5612	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R5613	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R5902	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R5932	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5933	ERJ6GEYJ331V	MGF CHIP 1/10W 330	
R5934	ERDS2TJ101	100	
R6001	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R6003	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6004	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6005	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6006	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6007	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6008	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6009	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6010	ERDS2TJ101	100	
R6011	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6012	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R6013	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R6014	ERDS2TJ101	100	
R6015	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R6016	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R6017	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R6019	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6020	ERJ6GEYJ273V	MGF CHIP 1/10W 27K	
R6022	ERJ6GEYJ243V	MGF CHIP 1/10W 24K	
R6023	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6024	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R6025	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6026	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6035	ERJ6GEYJ113V	MGF CHIP +-2% 1/10W 11K	
R6036	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6037	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6038	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6039	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6040	ERJ6GEYJ153V	MGF CHIP +-2% 1/10W 15K	
R6041	ERJ6GEYJ473V	MGF CHIP +-2% 1/10W 47K	
R6042	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6043	ERJ6GEYJ473V	MGF CHIP +-2% 1/10W 47K	
R6044	ERJ6GEYJ473V	MGF CHIP +-2% 1/10W 47K	
R6045	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R6050	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6051	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6052	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6053	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6054	ERDS2TJ471	470	
R6055	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6056	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6057	ERDS2TJ122	1.2K	
R6058	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6059	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R6101	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6102	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6104	ERJ6GEYJ221V	MGF CHIP 1/10W 220	

Ref. No.	Part No.	PartName & Description	Remarks
R6105	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R6106	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6107	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6108	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6111	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6112	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6113	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6123	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6124	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6125	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6126	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6127	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6128	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6131	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6132	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6133	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6134	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6135	ERJ6GEYJ102V	MGFCHIP 1/10W 1K	
R6136	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6137	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6138	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6139	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6142	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6143	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R6144	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R6145	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6146	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6147	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6148	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R6149	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6150	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6151	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6152	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R6154	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6155	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6156	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6157	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6158	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6159	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6162	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6163	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6164	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6167	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6171	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6172	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6173	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6174	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6175	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6176	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6177	ERJ6GEYJ333V	MGF CHIP +-2% 1/10W 33K	
R6179	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6180	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6201	ERJ6GEYJ274V	MGF CHIP 1/10W 270K	
R6202	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6203	ERJ6GEYJ184V	MGF CHIP 1/10W 180K	
R6204	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6208	ERJ6GEYJ274V	MGF CHIP 1/10W 270K	
R6209	ERJ6GEYJ184V	MGF CHIP 1/10W 180K	
R6211	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6212	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6214	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6215	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6216	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6218	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6219	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R6220	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6251	ERDS2TJ221	220	
R6252	ERDS2TJ221	220	
R6255	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6260	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6261	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6262	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6263	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	

Ref. No.	Part No.	PartName & Description	Remarks
R6301	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6303	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6304	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R6305	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6307	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6308	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R6312	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6313	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6502	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6503	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	
R6504	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6505	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6506	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R6507	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6508	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6509	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6510	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6512	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6513	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6514	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6515	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6516	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6517	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6518	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6519	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6520	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6522	ERDS2TJ560	56	
R6530	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6531	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6533	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6534	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6535	ERJ6GEYJ475V	MGF CHIP 1/10W 4.7M	
R6536	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6542	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6543	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6544	ERJ6GEYJ153V	MGF CHIP 1/10W 12K	
R6545	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6546	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6548	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R6550	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6554	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R7001	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7002	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7003	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R7004	ERDS1TJ272	1/2W 2.7K	
R7005	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R7006	ERDS2TJ561	560	
R7007	ERJ6GEYJ271V	MGF CHIP 1/10W 270	
R7010	ERDS2TJ222	2.2K	
R7011	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	

CAPACITORS

Ref. No.	PartNo.	Part Name & Description	Remarks
C1201	ECEA1CKA100	ELECTROLYTIC 16V 10	
C1202	ECUV1H102KBN	C CHIP 50V 1000P	
C1203	ECEA1HKAR47	ELECTROLYTIC 50V 0.47	
C1204	ECEA1CKA100	ELECTROLYTIC 16V 10	
C1205	ECEA1CKA100	ELECTROLYTIC 16V 10	
C1208	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C1209	ECEA1CKA100	ELECTROLYTIC 16V 10	
C1210	ECEA1CKA100	ELECTROLYTIC 16V 10	
C1211	ECEA1CKA101	ELECTROLYTIC 16V 100	
C1212	ECEA1CKA470	ELECTROLYTIC 16V 47	
C3003	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3004	ERJ6GEY0R00V	MGF CHIP 1/10W 0	●
C3006	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3007	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C3008	ECUV1H181JCN	C CHIP +-5% 50V 180P	
C3009	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C3010	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3011	ECUV1H470JCN	C CHIP +-5% 50V 47P	
C3013	ECUV1C224ZFN	C CHIP +80%-20% 16V 0.22	
C3015	ECEA0JKA470	ELECTROLYTIC 6.3V 47	

Ref. No.	PartNo.	Part Name & Description	Remarks
C3016	ECEA1CKA100	ELECTROLYTIC 16V 10	
C3019	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2	
C3020	ECEA1CKA220	ELECTROLYTIC 16V 22	
C3021	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2	
C3022	ECUV1C224ZFN	C CHIP +80%-20% 16V 0.22	
C3023	ECUV1H680JCN	C CHIP +-5% 50V 68P	
C3024	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3025	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3026	ECUV1H822KBN	C CHIP 50V 8200P	
C3027	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3030	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3031	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3032	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3034	ECUV1H181JCN	C CHIP +-5% 50V 180P	
C3035	ECUV1H180JCN	C CHIP +-5% 50V 18P	
C3036	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3038	ECEA1CKA100	ELECTROLYTIC 16V 10	
C3043	ECUV1H392KBN	C CHIP 50V 3900P	
C3044	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3045	ECEA1HKS3R3	ELECTROLYTIC 50V 3.3	
C3046	ECEA1HKS2R2	ELECTROLYTIC 50V 2.2	
C3047	ECEA0JKS101	ELECTROLYTIC 6.3V 100	
C3048	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3050	ECEA0JKS220	ELECTROLYTIC 6.3V 22	
C3053	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3055	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3056	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3057	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3058	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3081	ECUV1H102KBN	C CHIP 50V 1000P	
C3082	ECUV1H332KBN	C CHIP 50V 3300P	
C3083	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3084	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3231	ECEA1HKA010	ELECTROLYTIC 50V 1	
C3232	ECUV1H102KBN	C CHIP 50V 1000P	
C3233	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3234	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C3235	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3236	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3237	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3301	ECUV1H220JCN	C CHIP +-5% 50V 22P	
C3302	ECUV1H180JCN	C CHIP +-5% 50V 18P	
C3303	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3304	ECEA0JKA221	ELECTROLYTIC 6.3V 220	
C3308	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3309	ECEA1HKA010	ELECTROLYTIC 50V 1	
C3310	ECUV1H333KBN	C CHIP 50V 0.033	
C3311	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3312	ECUV1H332KBN	C CHIP 50V 3300P	
C3313	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C3314	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2	
C3319	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C3326	ECEA1HKA010	ELECTROLYTIC 50V 1	
C3335	ECEA1CKA101	ELECTROLYTIC 16V 100	
C3363	ECUV1H220JCN	C CHIP +-5% 50V 22P	
C4001	ECUV1C224ZFN	C CHIP +80%-20% 16V 0.22	
C4002	ECEA1HKS010	ELECTROLYTIC 50V 1	
C4003	ECUV1H272KBN	C CHIP 50V 2700P	
C4004	ECUV1H103KBN	C CHIP 50V 0.01	
C4005	ECEA0JKA220	ELECTROLYTIC 6.3V 22	
C4006	ECUV1H102KBN	C CHIP 50V 1000P	
C4007	ECEA0JKS220	ELECTROLYTIC 6.3V 22	
C4008	ECEA0JKS470	ELECTROLYTIC 6.3V 47	
C4009	ECEA1CKA100	ELECTROLYTIC 16V 10	
C4010	ECUV1E333KBN	C CHIP 25V 0.033	
C4011	ECUV1H103KBN	C CHIP 50V 0.01	
C4012	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4013	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C4014	ECEA1HKS010	ELECTROLYTIC 50V 1	
C4018	ECUV1H103KBN	C CHIP 50V 0.01	
C4020	ECEA1HKS010	ELECTROLYTIC 50V 1	
C4051	ECUV1H333KBN	C CHIP 50V 0.033	
C4102	ECQB1562JF	POLYESTER +-5% 100V 5600P	

Ref. No.	PartNo.	Part Name & Description	Remarks
C4103	ECUV1H103KBN	C CHIP 50V 0.01	
C4104	ECUV1H103KBN	C CHIP 50V 0.01	
C4105	ECEA1CKA220	ELECTROLYTIC 16V 22	
C4171	ECEA1HKA010	ELECTROLYTIC 50V 1	
C4502	ECEA1CKA100	ELECTROLYTIC 16V 10	
C4503	ECEA1CKA470	ELECTROLYTIC 16V 47	
C4504	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C4506	ECEA1CKA100	ELECTROLYTIC 16V 10	
C4508	ECA1CM471B	ELECTROLITIC 16V 470	
C4509	ECUV1E473ZFN	C CHIP +80%-20% 25V 0.047	
C4522	ECA1EM471B	ELECTROLYTIC 25V 470	
C4523	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C4525	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C5301	ECEA1CKA100	ELECTROLYTIC 16V 10	
C5302	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C5303	ECEA1HKAR47	ELECTROLYTIC 50V 0.47	
C5305	ECEA1HKAR47	ELECTROLYTIC 50V 0.47	
C5306	ECEA1CKA100	ELECTROLYTIC 16V 10	
C5307	ECEA1CKN100	ELECTROLYTIC 16V 10	
C5308	ECEA1CKN100	ELECTROLYTIC 16V 10	
C5401	VCUSTBC224KB	CERAMIC +80%-20% 16V 0.22	
C5402	ECUV1H222KBN	C CHIP 50V 2200P	
C5403	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2	
C5501	ECUV1E183KBN	C CHIP 25V 0.018	
C5502	ECUV1H471KBN	C CHIP 50V 470P	
C5505	ECEA1CKA470	ELECTROLYTIC 16V 47	
C5506	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C5507	ECEA1CKS100	ELECTROLYTIC 16V 10	
C5508	ECUV1H221JSN	C CHIP +-5% 50V 220P	MKA
C5510	ECEA1HKA010	ELECTROLYTIC 50V 1	
C5511	ECUV1E333KBN	C CHIP 25V 0.033	
C5516	ECUV1E333KBN	C CHIP 25V 0.033	
C5601	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C5602	ECUV1E104KBN	C CHIP 25V 0.1	
C5603	ECUV1H150JCN	C CHIP +-5% 50V 15P	
C5604	ECEA1HKA010	ELECTROLYTIC 50V 1	
C5605	ECUV1E153KBN	C CHIP 25V 0.015	
C5902	ECEA1CKA470	ELECTROLYTIC 16V 47	
C5903	ECEA1CKA470	ELECTROLYTIC 16V 47	
C5904	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C5905	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C5906	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C5932	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C6001	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C6003	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C6004	ECUV1H180JCN	C CHIP +-5% 50V 18P	
C6005	ECUV1H150GCN	C CHIP +-2% 50V 15P	
C6006	ECUV1H020CCN	C CHIP +-0.25P 50V 2P	
C6007	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C6012	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C6013	ECEA0JKA221	ELECTROLYTIC 6.3V 220	
C6014	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C6015	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C6016	ECUV1H101JCN	C CHIP +-5% 50V 100P	
C6017	ECUV1H101JCN	C CHIP +-5% 50V 100P	
C6018	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C6021	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C6026	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C6027	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C6028	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C6030	ECUV1H102KBN	C CHIP 50V 1000P	
C6031	ECUV1H102KBN	C CHIP 50V 1000P	
C6201	ECUV1H102KBN	C CHIP 50V 1000P	
C6203	ECUV1H103KBN	C CHIP 50V 0.01	
C6205	ECUV1H103KBN	C CHIP 50V 0.01	
C6206	ECUV1H103KBN	C CHIP 50V 0.01	
C6207	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
C6208	ECUV1H102KBN	C CHIP 50V 1000P	
C6210	ECUV1E104KBN	C CHIP 25V 0.1	
C6211	ECUV1H272KBN	C CHIP 50V 2700P	
C6212	ECEA1HKA010	ELECTROLYTIC 50V 1	
C6213	ECUV1H151KN	C CHIP 50V 150P	
C6214	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	

Ref. No.	PartNo.	Part Name & Description	Remarks
C6216	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C6217	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C6218	ECUV1H100CCN	C CHIP +-0.25P 50V 10P	
C6219	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C6221	ECUV1H272KBN	C CHIP 50V 2700P	
C6222	ECUV1H103KBN	C CHIP 50V 0.01	
C6223	ECUV1H392KBN	C CHIP 50V 3900P	
C6234	ECEA1CKA100	ELECTROLYTIC 16V 10	
C6235	ECEA0JKA221	ELECTROLYTIC 6.3V 220	
C6251	ECEA1CKA100	ELECTROLYTIC 16V 10	
C6502	ECEA1HKA010	ELECTROLYTIC 50V 1	
C6503	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C6504	ECEA0JKA470	ELECTROLYTIC 6.3V 47	
C6505	ECUV1H102KBN	C CHIP 50V 1000P	
C6506	ECEA1HKAR47	ELECTROLYTIC 50V 0.47	
C6509	ECA0JM102B	ELECTROLYTIC 6.3V 1000	
C6511	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C6513	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C7001	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C7002	ECEA0JKA101	ELECTROLYTIC 6.3V 100	
C7003	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C7004	ECEA1CKA100	ELECTROLYTIC 16V 10	
C7005	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C7010	ECUV1H102KBN	C CHIP 50V 1000P	
C7012	ECA0JM102B	ELECTROLYTIC 6.3V 1000	
C7013	ECUV1H102KBN	C CHIP 50V 1000P	

FILTERS

Ref. No.	Part No.	Part Name & Description	Remarks
FL4051	VLFS0014		

COILS

Ref. No.	Part No.	Part Name & Description	Remarks
L3001	ELEXT390KE04	39	
L3002	ELESN101KA	100	
L3004	ELEXT270KE04	27	
L3005	VLQSH02R330K	33	
L3010	ELESN470KA	47	
L3231	ELESN221KA	220	
L3302	ELESN101KA	100	
L3303	VLPS0111	CHIP BEAD INDUCTOR	MKA
L3304	VLPS0111	CHIP BEAD INDUCTOR	MKA
L3305	VLPS0111	CHIP BEAD INDUCTOR	MKA
L4001	VLQSU06R153K	15M	
L4002	VLQSH02R101K	100	
L4004	VLQSH02R270K	27	
L4101	ELESN471KA	470	
L5901	ELESN101KA	100	
L7001	ELESN100KA	10	
L7002	ELESN101KA	100	

CRYSTAL OSCILLATOR

Ref. No.	Part No.	Part Name & Description	Remarks
X3301	VSXS0176		
X5501	CSB503F38		
X5601	VSXS0208-B		
X6001	VSXS0784		MKA

PIN HEADERS

Ref. No.	Part No.	Part Name & Description	Remarks
P1201	VJPS0278	CONNECTOR 8P	
P3001	VJPS0882	CONNECTOR 12P	
P4001	VJSS0888	FE CONNECTOR 2P	
P4501	VEKS5647	CONNECTOR CORD W/PLUG	
P4591	VJPS0268	CONNECTOR 2P	
P5301	VEKS5655	CONNECTOR CORD W/PLUG	
P5302	VEKS5646	CONNECTOR CORD W/PLUG	
P6001	VJPS0275	CONNECTOR 5P	
P6002	VJPS0881	CONNECTOR 8P	
P6003	VEKS5648	CONNECTOR CORD W/PLUG	
P6004	VJSS0891	CONNECTOR 3P	

Ref. No.	Part No.	Part Name & Description	Remarks
P6201	VJPS0883	CONNECTOR 14P	
P7002	VEKS5649-1	CONNECTOR CORD W/PLUG	

SWITCHES

Ref. No.	Part No.	Part Name & Description	Remarks
SW6001	VSHS0058	LEAF SWITCH-SAFETY TAB	
SW6002	VSSS0159	MODE SELECT SWITCH	
SW6301	EVQ21405R	PUSH SWITCH	
SW6302	EVQ21405R	PUSH SWITCH	
SW6304	EVQ21405R	PUSH SWITCH	
SW6305	EVQ21405R	PUSH SWITCH	
SW6306	EVQ21405R	PUSH SWITCH	
SW6307	EVQ21405R	PUSH SWITCH	
SW6308	EVQ21405R	PUSH SWITCH	
SW6310	EVQ21405R	PUSH SWITCH	
SW6311	EVQ21405R	PUSH SWITCH	
SW6312	EVQ21405R	PUSH SWITCH	
SW6501	EVQ21405R	PUSH SWITCH	

FUSE & PROTECTOR

Ref. No.	Part No.	Part Name & Description	Remarks
PR1201	ICP-F38	IC PROTECTOR 1.5A	△
	OR UN10015	IC PROTECTOR 1.5A	△
PR1203	ICP-F15	IC PROTECTOR 50V 2A	△

TRANSFORMER

Ref. No.	Part No.	Part Name & Description	Remarks
T4101	VLTS0367		MKA

JACKS

Ref. No.	Part No.	Part Name & Description	Remarks
JK4591	TJS7A8030	EARPHONE JACK SOCKET	
JK4701	LJP68008A	AUDIO/VIDEO JACK SOCKET	

MISCELLANEOUS

Ref. No.	Part No.	Part Name & Description	Remarks
E21	ENV56D55G3	TUNER,UHF/VHF NR	MKA
E27	PNA4611M00HC	INFRARED RECEIVER UNIT	MKA
E48	XYN3+F10S	SCREW W/WASHER,STEEL	
E54	VSCS1434	HEAT SINK	
E55	XNG3	NUT,STEEL	
E88	VEPS7010Z	INTERMEDIATE FREQUENCY C.B.A. NR	MKA

12.3.2. POWER SUPPLY C.B.A.■

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name & Description	Remarks
IC1001	STR-F6624	IC, LINEAR SWITCHING CONTROL	△
IC1002	ON3131-S.KT	IC, LINEAR ERROR V. DET	△
	OR ON3131-R.KT	IC, LINEAR ERROR V. DET	△

TRANSISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
Q1001	FS30KMJ3	F.E.T.	△
Q1002	FS30KMJ3	F.E.T.	△
Q1003	2SD637 (R,S)		
Q1004	2SC2631		

DIODES

Ref. No.	Part No.	Part Name & Description	Remarks
D1001	MA719		
D1002	EG01		
	OREG01V1		
D1003	EG01		
	OR EG01V1		
D1004	EG01		
	OR EG01V1		

Ref. No.	Part No.	Part Name & Description	Remarks
D1005	EG01		
	OR EG01V1		
D1006	FML-G22S		
D1007	EG01		
	OR EG01V1		
D1008	RK16LF013211		
D1009	EG01		
	OR EG01V1		
D1010	RK49LF302		
D1011	RL2ALFB1		
D1012	MA4062NM	ZENER 6.2V	
D1013	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D1014	ERA15-01V3		
	OR ERA15-01V5		
D1015	ERA15-01V3		
	OR ERA15-01V5		

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R1001	ERG2SJ104H	METAL OXIDE 2W 100K	
R1002	ERDS2TJ104	100K	
R1003	ERX2SJR22H	METAL OXIDE 2W 0.22	
R1004	ERD2FCG681P	+ -2% 680	△
R1005	ERDS2TJ152	1.5K	
R1007	ERDS2TJ332	3.3K	
R1008	ERDS2TJ562	5.6K	
R1009	ERDS2TJ8R2	8.2	
R1010	ERDS2TJ223	22K	
R1011	ERDS2TJ6R8	6.8	
R1012	ERDS2TJ223	22K	
R1015	ERQ12AJ101P	FUSE 1/2W 100	△
R1016	ERDS2TJ104	100K	
R1017	ERDS1TJ182	1/2W 1.8K	
R1018	ERDS2TJ153	15K	
R1019	ERDS2TJ471	470	
R1020	EROS2TKD3901	METAL FILM +-0.5% 3.9K	
R1021	EROS2TKD1801	METAL FILM +-0.5% 1.8K	
R1022	ERDS2TJ223	22K	
R1023	ERDS2TJ223	22K	
R1024	ERDS2TJ561	560	
R1025	ERU5TAK2R2	FUSE +-10% 5W 2.2	△

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C1001	ECEC2DA331BB	ELECTROLYTIC 200V 330	△
C1002	VCKSFMK332MY	CERAMIC +-20% 125V 3300P	△
C1003	ECA1EHG101B	ELECTROLYTIC 25V 100	
C1004	VCYSARH471KB	CERAMIC 50V 470P	
C1005	VCKSWMM332KR	CERAMIC 2KV 3300P	MKA
C1006	VCKSWZP102KR	CERAMIC 250V 1000P	
C1007	VCYSARH102KB	CERAMIC 50V 1000P	
C1008	VCYSARH102KB	CERAMIC 50V 1000P	
C1009	VCKSWZP102KR	CERAMIC 250V 1000P	
C1010	VCKSWZP102KR	CERAMIC 250V 1000P	
C1011	EEUFC1V102E	ELECTROLYTIC 35V 1000	
C1012	EEUFC1V102E	ELECTROLYTIC 35V 1000	
C1013	ECA1HHG330	ELECTROLYTIC 50V 33	
C1014	ECA1HHG330	ELECTROLYTIC 50V 33	
C1015	EEUFC1V681E	ELECTROLYTIC 35V 680	
C1016	EEUFC1V102E	ELECTROLYTIC 35V 1000	
C1019	VCKSWZP332KR	CERAMIC 250V 3300P	
C1020	VCKSWZL221KR	CERAMIC 1KV 220P	
C1021	VCKSWZP332KR	CERAMIC 250V 3300P	
C1022	VCKSWZL221KR	CERAMIC 1KV 220P	
C1023	EEUFC1C122E	ELECTROLYTIC 16V 1200	
C1024	EEUFC1E102E	ELECTROLYTIC 25V 1000	
C1025	VCESAU1H330E	ELECTROLYTIC 50V 33	
C1026	VCESAU2C101E	ELECTROLYTIC 160V 100	

Ref. No.	Part No.	Part Name & Description	Remarks
C1027	VCYSARH102KB	CERAMIC 50V 1000P	

COILS

Ref. No.	Part No.	Part Name & Description	Remarks
L1001	VLPS0088	FERRITE BEAD CORE	MKA
L1002	VLPS0087		MKA
L1003	VLPS0087		MKA
L1004	VLPS0087		MKA
L1005	LSLQA10R5R6M	5.6	
L1006	LSLQA10R5R6M	5.6	
L1007	LSLQA10R5R6M	5.6	
L1008	VLPS0087		MKA
L1009	VLPS0087		MKA
L1010	VLPS0087		MKA
L1011	VLPS0088	FERRITE BEAD CORE	MKA
L1012	VLPS0088	FERRITE BEAD CORE	MKA
L1013	VLPS0088	FERRITE BEAD CORE	MKA

FUSE & PROTECTOR

Ref. No.	Part No.	Part Name & Description	Remarks
PR1001	ICP-F38-1	IC PROTECTOR 1.5A	△
	OR UN10015	IC PROTECTOR 1.5A	△
PR1002	ICP-F38-1	IC PROTECTOR 1.5A	△
	OR UN10015	IC PROTECTOR 1.5A	△
PR1003	ICP-F50	IC PROTECTOR 50V 2A	△

RELAY

Ref. No.	Part No.	Part Name & Description	Remarks
RL1001	LSSY0002		△

TRANSFORMER

Ref. No.	Part No.	Part Name & Description	Remarks
T1001	ETS35AA4B5NC		△
T1002	ETE28K118AZ		△
T1003	ETS29AK3J9AD		△

PRINTED CIRCUIT BOARD ASSEMBLY

Ref. No.	Part No.	Part Name & Description	Remarks
E89	LRP63007A	SUB POWER C.B.A.	▲

MISCELLANEOUS

Ref. No.	Part No.	Part Name & Description	Remarks
E48	XYN3+F10S	SCREW W/WASHER,STEEL	
E63	VEKS5653	CONNECTOR CORD W/PLUG	
E64	VEKS5654	CONNECTOR CORD W/PLUG	
E66	LUS63005A	HEAT SINK	
E69	LUS63006A	HEAT SINK	
E73	TUX77809	CLAMPER	MKA
E90	XTV3+8JR	TAPPING SCREW,STEEL	
E91	XYN3+F8S	SCREW W/WASHER,STEEL	

12.3.3. SUB POWER C.B.A.▲

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name & Description	Remarks
IC1101	MB3778PF	IC, LINEAR POWER SUPPLY CONTROL	

TRANSISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
Q1101	2SD814A		
Q1102	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q1103	2SB789A	CHIP	
Q1104	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q1105	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q1106	XN1501	COMPLX CMP SI NPN CHIP	

Ref. No.	Part No.	Part Name & Description	Remarks
Q1107	2SD1030 (R,S)	CHIP	
Q1108	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q1109	2SD1030 (R,S)	CHIP	
Q1110	2SD874A (R,S)	CHIP	
Q1111	2SB766A (R,S)		
Q1112	2SC2412K1	CHIP	
	OR 2SD601A	CHIP	
Q1113	2SD874A (R,S)	CHIP	
Q1114	2SB766A (R,S)		
Q1115	HN1B01F	COMPLX CMP SI NPN/PNP CNIP	
	OR IMZ1	COMPLX CMP SI NPN/PNP CHIP	
	OR XN4601	COMPLX CMP SI NPN/PNP CHIP	

DIODES

Ref. No.	Part No.	Part Name & Description	Remarks
D1101	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D1102	ERA15-02V5		
D1103	MA4110N-M	ZENER 11V	
D1104	MA4056N	ZENER 5.6V	
D1105	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D1106	ERA15-01V5		
D1107	ERA15-01V5		
D1108	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D1109	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D1110	MA4160N-L	ZENER 1.6V	
D1111	MA4270N-H	ZENER 27V	
D1112	MA4390N-M	ZENER 39V	
D1113	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D1114	MA4390N-M	ZENER 39V	
D1115	MA4270N-H	ZENER 27V	
D1117	MA4390N-M	ZENER 39V	
D1118	MA4390N-M	ZENER 39V	

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R1101	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R1102	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R1103	ERJ6ENF6801V	MGF CHIP +-1% 1/10W 6.8K	
R1104	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R1105	ERJ6GEYJ123V	MGF CHIP 1/10W 12K	
R1106	ERJ6GEYJ271V	MGF CHIP 1/10W 270	
R1107	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	
R1108	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R1109	ERJ6ENF2201V	MGF CHIP +-1% 1/10W 2.2K	
R1110	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R1111	ERJ6ENF6801V	MGF CHIP +-1% 1/10W 6.8K	
R1112	EVNCRYAA03B52	VARIABLE 500	
R1113	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R1114	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R1115	EVNCRYAA03B52	VARIABLE 500	
R1116	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R1117	ERJ6GEYJ184V	MGF CHIP 1/10W 180K	
R1118	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R1119	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R1120	EVNCRYAA03B53	VARIABLE 5K	
R1121	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	

Ref. No.	Part No.	Part Name & Description	Remarks
R1122	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R1123	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R1124	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R1125	ERJ6ENF6802V	MGF CHIP +-1% 1/10W 68K	
R1126	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R1127	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R1128	EVNCA03B53	VARIABLE 5K	
R1129	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R1130	ERJ6ENF6802V	MGF CHIP +-1% 1/10W 68K	
R1131	ERJ6GEYJ560V	MGF CHIP 1/10W 56	
R1132	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R1133	ERJ6ENF6802V	MGF CHIP +-1% 1/10W 68K	
R1134	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R1135	ERJ6GEYJ560V	MGF CHIP 1/10W 56	
R1136	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R1137	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R1138	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R1139	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R1140	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R1141	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R1142	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R1143	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R1144	ERJ6GEYJ822V	MGF CHIP 1/10W 8.2K	
R1145	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R1146	ERDS2TJ222	2.2K	
R1147	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R1148	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R1149	ERDS2TJ222	2.2K	
R1150	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R1151	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R1152	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R1153	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R1154	ERJ6ENF2202V	MGF CHIP +-1% 1/16W 22K	

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C1101	EEAGA1V100H	ELECTROLYTIC 35V 10	
C1102	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C1103	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C1104	ECUV1H821JCN	C CHIP +-5% 50V 820P	
C1105	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C1106	EEAGA1A330H	ELECTROLYTIC 10V 33	
C1107	ECUV1H222KBN	C CHIP 50V 2200P	
C1108	ECUV1H222KBN	C CHIP 50V 2200P	
C1109	EEAGA1C220H	ELECTROLYTIC 16V 22	
C1110	ECUV1E104KBN	C CHIP 25V 0.1	
C1111	ECUV1E104KBN	C CHIP 25V 0.1	
C1112	ECQE2103KF	POLYESTER +-10% 200V 0.01	
C1113	EEAGA1A470H	ELECTROLYTIC 10V 47	
C1114	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C1115	EEAGA1C220H	ELECTROLYTIC 16V 22	
C1116	ECUV1H222KBN	C CHIP 50V 2200P	
C1117	ECUV1E104KBN	C CHIP 25V 0.1	
C1118	ECUV1H222KBN	C CHIP 50V 2200P	
C1119	EEAGA1C100H	ELECTROLYTIC 16V 10	
C1120	EEAGA1C100H	ELECTROLYTIC 16V 10	
C1121	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C1122	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C1124	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C1125	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C1130	ECUV1H104ZFN	C CHIP +80%-20% 50V 0.1	
C1131	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C1132	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C1133	VCKSWZP332KR	CERAMIC 250V 3300	
C1134	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	

COILS

Ref. No.	Part No.	Part Name & Description	Remarks
L1101	ELESN220KA	22	
L1102	ELESN220KA	22	
L1103	ELESN220KA	22	
L1104	VLQASB7D100K	10	

Ref. No.	Part No.	Part Name & Description	Remarks
L1105	VLQASB7D220K	22	
L1106	VLQASB7D220K	22	

PIN HEADERS

Ref. No.	Part No.	Part Name & Description	Remarks
P1101	VEKS5652	CONNECTOR CORD W/PLUG	
P1102	VEKS5650	CONNECTOR CORD W/PLUG	
P1103	VEKS5651	CONNECTOR CORD W/PLUG	

12.3.4. HEAD AMP C.B.A.■

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name & Description	Remarks
IC2601	AN3809K	IC, LINEAR CYL. DRIVE	
IC3501	AN3371SB	IC, LINEAR HEAD AMP	

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R2601	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2602	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2603	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2604	ERDS2TJ1R0	1	
R2605	ERDS2TJ1R2	1.2	
R2606	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R3502	ERJ6GEYOR00V	MGF CHIP 1/10W 0	●
R3503	ERJ6GEYOR00V	MGF CHIP 1/10W 0	●
R3507	ERJ6GEYJ331V	MGF CHIP 1/10W 330	

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C2604	ECUV1E104KBN	C CHIP 25V 0.1	
C2605	ECUV1E104KBN	C CHIP 25V 0.1	
C2606	ECUV1E104KBN	C CHIP 25V 0.1	
C2607	ECUV1E104KBN	C CHIP 25V 0.1	
C2608	ECUV1E104ZFN	CCHIP +80%-20% 25V 0.1	
C2609	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C2610	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C2611	ECUV1E333KBN	C CHIP 25V 0.033	
C2612	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C2613	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C2614	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C2615	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7	
C3504	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C3505	ECEA1CKA470	ELECTROLYTIC 16V 47	
C3506	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3508	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3511	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3512	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3513	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3528	ECUV1E104ZFN	C CHIP +80%-20% 25V 0.1	
C3529	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	

COILS

Ref. No.	Part No.	Part Name & Description	Remarks
L3501	ELESN101KA	100	

PIN HEADERS

Ref. No.	Part No.	Part Name & Description	Remarks
P3501	VJSS0883	CONNECTOR 12P	

12.3.5. JUNCTION C.B.A.■

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R2531	ERDS2TJ270	27	

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C2531	ECEA1CKA220	ELECTROLYTIC 16V 22	

Ref. No.	Part No.	Part Name & Description	Remarks
C2532	ECEA1CKA220	ELECTROLYTIC 16V 22	
C2533	ECEA1CKA220	ELECTROLYTIC 16V 22	

PIN HEADERS

Ref. No.	Part No.	Part Name & Description	Remarks
P2531	VJSS0884	CONNECTOR 14P	

12.3.6. TV MAIN C.B.A.■

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name & Description	Remarks
IC451	LA7837	IC, LINEAR VERTICAL OUT	

TRANSISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
Q431	2SA1175		
	OR 2SA1175 (TH)		MKA
	OR 2SA733 (TQ)		MKA
Q432	2SC3311A (R)		MKA
Q433	2SB1322A (RS)		MKA
Q434	2SC3311A (R)		MKA
Q501	2SC2482KT		MKA
Q506	2SA1175		
	OR 2SA1175 (TH)		MKA
	OR 2SA733 (TQ)		MKA
Q507	2SC2785 (TH)		MKA
	OR 2SC2785 (TJ)		MKA
	OR 2SC945A (TQ)		
Q508	2SC2785 (TH)		MKA
	OR 2SC2785 (TJ)		MKA
	OR 2SC945A (TQ)		
Q551	2SD2586LBK		△ MKA
Q571	2SC2785 (TH)		MKA
	OR 2SC2785 (TJ)		MKA
	OR 2SC945A (TQ)		
Q581	2SA1321TPE6		MKA
	OR 2SA1767 (Q)		MKA
	OR 2SB1221 (Q)		MKA

DIODES

Ref. No.	Part No.	Part Name & Description	Remarks
D401	ERB12-01		
	OR ERB12-01RKV1		
	OR ERB12-01V		
D501	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D503	ERB43-04V		
	OR ES1V		
D504	MA4047-H	ZENER 4.7V	
	OR MA4047-M	ZENER 4.7V	
	OR RD4.7ESAB	ZENER 4.7V	
	OR RD4.7ESAB2	ZENER 4.7V	
	OR 04AZ4.7ZTPA7	ZENER 4.7V	
D505	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		

Ref. No.	Part No.	Part Name & Description	Remarks
D523	MA4047-H	ZENER 4.7V	
	OR MA4047-M	ZENER 4.7V	
	OR RD4.7ESAB	ZENER 4.7V	
	OR RD4.7ESAB2	ZENER 4.7V	
	OR 04AZ4.7ZTPA7	ZENER 4.7V	
D524	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D553	ERB43-04V		
	OR ES1V		
D554	MA167		
	OR 4148-TA		MKA
D555	ERB43-04V		
	OR ES1V		
D558	ERB43-04V		
	OR ES1V		
D560	ERB43-04V		
	OR ES1V		
D591	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D801	EM02BMV		△ MKA
	OR ERC13-08V		△
D802	EM02BMV		△ MKA
	OR ERC13-08V		△
D803	EM02BMV		△ MKA
	OR ERC13-08V		△
D804	EM02BMV		△ MKA
	OR ERC13-08V		△
D813	RU4YXLFM1		

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R401	ERDS2TJ821	820	
R402	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R405	ERDS1TJ102	1/2W 1K	
R409	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R410	ERDS2TJ392	3.9K	
R411	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R413	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	
R414	ERDS1FJ1R8P	1.8	△ MKA
R422	ERD25FJ101P	100	△
R427	ERQ14ZJ1R5P	FUSE 1/4W 1.5	△ MKA
R431	ERDS2TJ103	10K	
R432	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R433	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R434	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R435	ERDS2TJ102	1K	
R436	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R466	ERJ6GEYJ683V	MGF CHIP 1/10W 68K	
R468	ERDS2TJ102	1K	
R469	ERDS2TJ222	2.2K	
R470	ERDS2TJ152	1.5K	
R471	ERDS2TJ221	220	
R472	ERDS2TJ221	220	
R473	ERDS2TJ101	100	
R474	ERDS2TJ821	820	
R475	ERDS2TJ821	820	
R476	ERDS2TJ561	560	
R478	ERDS2TJ332	3.3K	
R480	ERDS2TJ271	270	
R481	ERDS2TJ821	820	
R482	ERDS2TJ100	10	
R484	ERDS2TJ101	100	
R501	ERDS2TJ471	470	
R502	ERDS2TJ332	3.3K	
R503	ER0S2TKF1212	METAL FILM +-1% 12.1K	△
	OR VRESR4TF1212	METAL FILM +-1% 12.1K	△

Ref. No.	Part No.	Part Name & Description	Remarks
R504	ERDS2TJ331	330	
R509	ERDS2TJ101	100	
R511	ERG2ANJ222H	METAL OXIDE 2W 2.2K	MKA
R512	ERDS2TJ222	2.2K	
R513	ERDS2TJ472	4.7K	
R515	ERDS2TJ101	100	
R516	LAR05272J09	W FLMPLEF 5W 2.7K	
R519	ERDS2TJ822	8.2K	
R526	ERDS2TJ272	2.7K	
R527	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R529	ERDS2TJ103	10K	
R531	ERDS2TJ223	22K	
R535	ERDS2TJ472	4.7K	
R536	ERDS2TJ562	5.6K	
R546	ERDS2TJ564	560K	
R552	ERDS2TJ273	27K	
R553	ERDS2TJ102	1K	
R554	ERDS2TJ123	12K	
R555	ERDS2TJ124	120K	
R556	ERDS2TJ104	100K	
R557	ERDS2TJ563	56K	
R558	ERQ2CJP102S	FUSE 2W 1K	△ MKA
R559	ERDS2TJ563	56K	
R560	ERDS2TJ563	56K	
R561	ERQ1CJP2R7S	FUSE 1W 2.7	△
R562	ERDS2TJ563	56K	
R565	ERDS1FJ1R0P	1/2W 1	△
R566	ERDS2TJ104	100K	
R567	ERDS2TJ104	100K	
R571	ERDS2TJ101	100	
R572	ERDS2TJ331	330	
R573	ERDS2TJ221	220	
R574	ERDS2TJ103	10K	
R581	ERDS1FJ2R2	1/2W 2.2	△
R582	ERDS1FJ2R2	1/2W 2.2	△
R584	ERDS2TJ562	5.6K	
R585	ERDS2TJ473	47K	
R591	ERDS2TJ222	2.2K	
R592	ERDS2TJ103	10K	
R801	ERF3AKR47	W FLMPRF +-10% 3W 0.47	△
	OR LAR03R47K02	W FLMPLEF +-10% 3W 0.47	△
R810	VRESC2TK825C	SOLID +-10% 1/2W 8.2M	△
	OR VRESC2TK825T	SOLID +-10% 1/2W 8.2M	△
R821	ERDS2TJ103	10K	
R4530	ERQ1ABJP8R2S	FUSE 1W 8.2	△

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C401	ECEA1HGE2R2	ELECTROLYTIC 50V 2.2	
C402	ECA1CM471B	ELECTROLITIC 16V 470	
C408	ECA1HGE010KB	ELECTROLYTIC 50V 1	MKA
C409	ECA1VM470B	ELECTROLYTIC 35V 47	
C413	ECQB1H104KF	POLYESTER 50V 0.1	
C414	ECA1EM102E	ELECTROLYTIC 25V 1000	MKA
C418	ECA1VM221B	ELECTROLYTIC 35V 220	
C458	ECQB1H103KM	POLYESTER 50V 0.01	MKA
C501	ECQB1H223KM	POLYESTER 50V 0.022	
C510	ECKW2H681KB5	CERAMIC 500V 680P	
C513	ECA1HM100B	ELECTROLYTIC 50V 10	
C520	ECUV1H103ZFN	C CHIP +80%-20% 50V 0.01	
C522	ECA1HM100B	ELECTROLYTIC 50V 10	
C524	ECKC3D561KBP	CERAMIC 2KV 560P	△ MKA
C531	ECA1HM3R3B	ELECTROLYTIC 50V 3.3UF	MKA
C552	ECA1EM471B	ELECTROLYTIC 25V 470	
C553	ECKW2H471KB5	CERAMIC 500V 470P	MKA
C554	ECWH12H562JS	POLYESTER +-5% 1250V 5600	△
C556	ECWF2224JBB	POLYESTER +-5% 250V 0.22	△
C558	ECA1VM101B	ELECTROLYTIC 35V 100	
C559	ECA2EM100B	ELECTROLYTIC 250V 10	MKA
C560	ECA2EM100B	ELECTROLYTIC 250V 10	MKA
C561	ECA2CM2R2B	ELECTROLYTIC 160V 2.2	MKA

Ref. No.	Part No.	Part Name & Description	Remarks
C563	ECEA160V33	ELECTROLYTIC 160V 33	MKA
C571	ECA1HM3R3B	ELECTROLYTIC 50V 3.3UF	MKA
C573	ECQE2475KF	POLYESTER 250V 4.7	
C801	ECKCNS223ZVP	CERAMIC +80%-20% 125V 0.022	△ MKA
	OR ECKDNS223ZV	CERAMIC +80%-20% 125V 0.022	△
C803	ECKCNS223ZVP	CERAMIC +80%-20% 125V 0.022	△ MKA
	OR ECKDNS223ZV	CERAMIC +80%-20% 125V 0.022	△
C804	ECKATS103MF	CERAMIC +-20% 125V 0.01	△
	OR ECKDRS103ZV	CERAMIC +80%-20% 125V 0.01	△
C805	ECKM2H472PE	CERAMIC +100%-0%500V 4700P	
C806	ECKM2H472PE	CERAMIC +100%-0%500V 4700P	
C807	ECKM2H472PE	CERAMIC +100%-0%500V 4700P	
C808	ECKM2H472PE	CERAMIC +100%-0%500V 4700P	
C809	VCKSFMK221KW	CERAMIC 125V 220	△
C822	ECKW1H103ZF5	CERAMIC +80%-20% 50V 0.01	
C4527	ECA1EM471B	ELECTROLYTIC 25V 470	

COILS

Ref. No.	Part No.	Part Name & Description	Remarks
L552	TSC925V		
L801	ELF18D656V	LINE FILTER 1A 27M	△

PIN HEADERS

Ref. No.	Part No.	Part Name & Description	Remarks
P2	VJSS0898	4P WIRE TRAP	MKA
P4	VJPS0267	CONNECTOR 10P	
P801	VJSS3335	AC INLET	△
P802	VJPS1154	CONNECTOR 2P	
P803	VJSS3336	DC INLET	△
P804	VJPS0276	CONNECTOR 6P	
P805	TEL302-5X	CHECK TERMINAL	
P807	VJPS0303	CONNECTOR 2P	
P899	VJPS0258	CONNECTOR 3P	
P4502	VJPS0273	CONNECTOR 3P	

FUSE & PROTECTOR

Ref. No.	Part No.	Part Name & Description	Remarks
F801	VSFS0003A40	FUSE 125V 4A	△ MKA
	OR XBA1C40NU100	FUSE 125V 4A	△
F802	LSSF001A120	125V 12A	△
PR801	ICP-F15	IC PROTECTOR 50V 2A	△

RELAY

Ref. No.	Part No.	Part Name & Description	Remarks
RL501	TSEH0005	RELAY,120V	△

TRANSFORMER

Ref. No.	Part No.	Part Name & Description	Remarks
T501	ETH09K6AZ		MKA
T551	ZTFL12003A	FLYBACK TRANSFORMER	△

MISCELLANEOUS

Ref. No.	Part No.	Part Name & Description	Remarks
E23	EYF52BC	FUSE HOLDER	
E41	TUC76677-1	HEAT SINK	
E49	XYN3+F6S	SCREW W/WASHER,STEEL	
E51	TJC6319	FUSE HOLDER	
E52	LUS61014A	SHIELD CASE	
E62	LMH69005A	INLET HOLDER	
E90	XTV3+8JR	TAPPING SCREW,STEEL	
E92	TMM76429-1	PURSE LOCK CLAMPER	

12.3.7. CRT C.B.A.■

TRANSISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
Q351	2SC1473-QNC		
	OR 2SC1473A (Q)		
	OR 2SC2482 (T)		MKA
	OR 2SC4015 (N)		
Q352	2SC1473-QNC		
	OR 2SC1473A (Q)		
	OR 2SC2482 (T)		MKA
	OR 2SC4015 (N)		
Q353	2SC1473-QNC		
	OR 2SC1473A (Q)		
	OR 2SC2482 (T)		MKA
	OR 2SC4015 (N)		
Q354	2SC1684 (Q,R,S)		
	OR 2SC2785 (TE)		MKA
	OR 2SC2785 (TF)		MKA
	OR 2SC2785 (TH)		MKA
	OR 2SC2785 (TJ)		MKA
	OR 2SC2785 (TK)		MKA
	OR 2SC3311A (Q)		
	OR 2SC3311A (R)		
	OR 2SC3311A (S)		
	OR 2SC945A (TKA)		
	OR 2SC945A (TPA)		
	OR 2SC945A (TQA)		

DIODES

Ref. No.	Part No.	Part Name & Description	Remarks
D352	MA185		
D353	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D354	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		
D355	MA165		
	OR WG713A		
	OR 1SS119		
	OR 1SS133T		

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R351	ERG1ANJ153H	METAL OXIDE 1W 15K	
R352	ERG1ANJ153H	METAL OXIDE 1W 15K	
R353	ERG1ANJ153H	METAL OXIDE 1W 15K	
R354	ERD25TJ272	2.7K	
R356	ERD25TJ272	2.7K	
R357	ERDS2TJ392	3.9K	
R358	ERDS2TJ392	3.9K	
R359	ERDS2TJ392	3.9K	
R360	ERDS2TJ391	390	
R361	ERDS2TJ391	390	

Ref. No.	Part No.	Part Name & Description	Remarks
R362	ERDS2TJ391	390	
R363	ERDS2TJ181	180	
R364	ERDS2TJ181	180	
R365	ERDS2TJ181	180	
R366	ERD25TJ272	2.7K	
R367	ERDS2TJ121	120	
R368	ERDS2TJ121	120	
R369	ERDS2TJ473	47K	
R370	ERDS2TJ822	8.2K	
R371	ERDS2TJ123	12K	
R372	ERDS2TJ473	47K	

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C351	VCYSARH391KB	CERAMIC 50V 390P	
C352	VCYSARH391KB	CERAMIC 50V 390P	
C353	VCYSARH471KB	CERAMIC 50V 470P	
C354	VCKSKZM102KB	CERAMIC 2KV 1000P	MKA
C358	ECA2CMR47B	ELECTROLYTIC 160V 0.47	

PIN HEADERS

Ref. No.	Part No.	Part Name & Description	Remarks
P351	VJPS0274	CONNECTOR 4P	
P352	VJWS4NN190BD	PARALLEL CONNECTOR 4P	
P355	LJP65001A	CRT SOCKET	MKA

MISCELLANEOUS

Ref. No.	Part No.	Part Name & Description	Remarks
E45	TMM76403-1	CLAMPER	
E50	TMM7443-1	CLAMPER	

12.3.8. ELECTRICAL PARTS LOCATED ON CHASSIS

Ref. No.	Part No.	Part Name & Description	Remarks
IC2501	AN3845SC	IC, LINEAR CAP./LOADING DRIVE	
E75	ULTSC10AN1	FUSE 125V 10A	
E81	VEKS5523	DEW SENSOR UNIT	

12.3.9. SUMMARY OF "E" ITEM NUMBERS
REFER TO ELECTRICAL PARTS LIST, FOR MODEL INFORMATION

Ref. No.	Part No.	Part Name & Description	Remarks
E1	VEPS3070A	MAIN C.B.A.	RTL
E6	VEPS5021Z	HEAD AMP C.B.A.	RTL
E7	VEPS0A25A	JUNCTION C.B.A.	RTL
E16	LRP61009A	TV MAIN C.B.A.	RTL
E17	LRP63003A	CRT C.B.A.	RTL
E20	LRM63006A	POWER SUPPLY C.B.A.	RTL
E21	ENV56D55G3	TUNER,UHF/VHF NR	
E23	EYF52BC	FUSE HOLDER	
E27	PNA4611M00HC	INFRARED RECEIVER UNIT	
E41	TUC76677-1	HEAT SINK	
E45	TMM76403-1	CLAMPER	
E48	XYN3+F10S	SCREW W/WASHER,STEEL	
E49	XYN3+F6S	SCREW W/WASHER,STEEL	
E50	TMM7443-1	CLAMPER	
E51	TJC6319	FUSE HOLDER	
E52	LUS61014A	SHIELD CASE	
E54	VSCS1434	HEAT SINK	
E55	XNG3	NUT,STEEL	
E62	LMH69005A	INLET HOLDER	
E63	VEKS5653	CONNECTOR CORD W/PLUG	
E64	VEKS5654	CONNECTOR CORD W/PLUG	
E66	LUS63005A	HEAT SINK	
E69	LUS63006A	HEAT SINK	

Ref. No.	Part No.	Part Name & Description	Remarks
E73	TUX77809	CLAMPER	
E75	ULTSC10AN1	FUSE 125V 10A	
E81	VEKS5523	DEW SENSOR UNIT	
E88	VEPS7010Z	INTERMEDIATE FREQUENCY C.B.A. NR	
E89	LRP63007A	SUB POWER C.B.A.	RTL
E90	XTV3+8JR	TAPPINGSCREW,STEEL	
E91	XYN3+F8S	SCREW W/WASHER,STEEL	
E92	TMM76429-1	PURSE LOCK CLAMPER	